## INSTALLATION RESTORATION PROGRAM (IRP)

### PHASE II STAGE 2 INVESTIGATION

VOLUME IV APPENDICES K-Q

127th FIGHTER WING MICHIGAN AIR NATIONAL GUARD SELFRIDGE AIR NATIONAL GUARD BASE MT. CLEMENS, MICHIGAN

**DECEMBER 1996** 



Prepared For
ANGRC/CEVR
ANDREWS AFB, MARYLAND

### **REPORT DOCUMENTATION PAGE**

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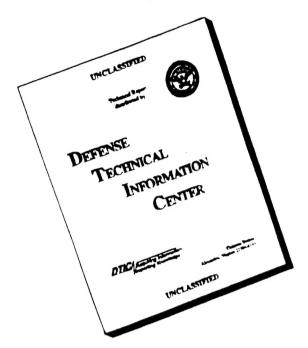
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# INSTALLATION RESTORATION PROGRAM (IRP)

### PHASE II STAGE 2 INVESTIGATION

### VOLUME IV APPENDICES K-Q

127th FIGHTER WING MICHIGAN AIR NATIONAL GUARD SELFRIDGE AIR NATIONAL GUARD BASE MT. CLEMENS, MICHIGAN

**DECEMBER 1996** 

**Prepared For** 

ANGRC/CEVR ANDREWS AFB, MARYLAND

Prepared By

Operational Technologies Corporation 4100 N.W. Loop 410, Suite 230 San Antonio, Texas 78229-4253 (210) 731-0000

# INSTALLATION RESTORATION PROGRAM (IRP)

### PHASE II STAGE 2 INVESTIGATION

### VOLUME IV APPENDICES K-Q

127th FIGHTER WING MICHIGAN AIR NATIONAL GUARD SELFRIDGE AIR NATIONAL GUARD BASE MT. CLEMENS, MICHIGAN

### **DECEMBER 1996**

### **Operational Technologies Corporation Prepared**

- Executive Summary
- Summary and Conclusions

### Roy F. Weston, Inc. Prepared

Introduction

- Results and Significance of Findings
- Field Investigation Program
- Environmental Setting
- Preliminary Feasibility Study
- Appendices A through Q

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### TABLE OF CONTENTS

Appendix	<u>Title</u>
	Volume II
A	DEFINITIONS, ACRONYMS, AND UNITS OF MEASURE
В	STATEMENT OF WORK
С	CLAYTON ENVIRONMENTAL CONSULTANTS' REPORT
D	PROFESSIONAL PROFILES OF KEY WESTON PERSONNEL
E	NATIONAL AMBIENT AIR QUALITY STANDARDS
F	QUALITY ASSURANCE PROJECT PLAN
	Volume III
G	SOIL BORING AND WELL COMPLETION LOGS
H	CONTINUOUS WATER LEVEL RECORDER DATA
I	HYDRAULIC CONDUCTIVITY CALCULATIONS
J	GROUNDWATER AND SURFACE WATER SAMPLING DOCUMENTATION
	Volume IV
K	SAMPLING CHAIN-OF-CUSTODY DOCUMENTATION
L	DATA VALIDATION TABLES
M	DOMESTIC WELL LOGS
N	HISTOGRAMS OF ANALYSES FOR SOIL SAMPLES
0	HISTOGRAMS OF ANALYSES FOR GROUNDWATER AND SURFACE WATER SAMPLES
P	DEFENSE PRIORITY MODEL
Q	CORRESPONDENCE

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### APPENDIX K

SAMPLE CHAIN-OF-CUSTODY DOCUMENTATION



d/Lab Work Request Custody Transfer R(

Received By Date 12

Assigned to \_

Phone 800-821-4588 Client Contact 645

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Project Number Class - 140

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S- Soil
W- Water
O- Oil

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DS- Drum Solids DL- Drum Liquids X- Other

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Custody Transfer Rand/Lab Work Request Received By \_

Client Contact Augustus Lo Phone 800-821-4528 Client LISAFOEHL

Assigned to \_

Date Due 12 /25 /87 (Holding Time Limit) Project Number 06 28 - 140 2 U. Krumm RFW Contact Christopher

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		SAMPLE IDENTIFICATION	ATION					ANAL	ANALYSES REQUESTED	EQUES	STED	•	
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	40A	Pet	Metak	As	149	ઝુ	BWA	–).જ ને રોજા
05-402-8003	Selfridge AKK	05-402-8003 Selfridge AKB Soil Boring Sample	1:25	12/18/87	500 mliar			Χ	Х	PΧ	X	X	X
05-402-8003	5	6		, ,	2 40 M Vials	χ							
05-403-8001					500 ml iar		X	X	X	X	X	X	X
05-403-8001					2, 40 ml vials	X							
05-403-8101					500 ml iar		X	Χ	χ	X	X	X	X
05-403-BICI					2 40 m/ vials	X							
05-403-8002					500 ml har		X	X	X	X	X	X	X
05-403-ADZ					2 40 m vials	χ							
05-403-8003					500 ml lar		X	X	X	X	X	X	X
05-403-B003				$\rightarrow$	2 40ml viols	Χ							
05-404-8001			-	12/19/87	500 ml iar		X	X	X	X	X	X	X
05-404-8001					-	X							
05-404-8002					500 ml iar		X	X	X	X	X	X	X
05-404-B002					2 40 ml vials	X							
05-404-8003					560 ml 1ar		X	X	X	X	X	X	X
05-404-8003				>	2 40 ml vials	X				•			
05-404-830		Trip Blank	3	12/19/87	1 40 ml Vial	X							
05-405-800		Soil Boring Sample Soi	1125 :		500ml 1ar		X	X	X	X	$\langle$	X	X
O5-405-B001	>	. / 7	→	>	2 40 m/ viah	X							
Matrix													

S- Soil W- Water O- Oil Matrix:

Special Instructions: DS- Drum Solids DL- Drum Liquids X- Other

Time 12-21 87 1500 Date 120305-17 Received By Relinquished By Items/Reason 17/9/8 5:00 pm Time Date ExpIRSS Received By treal Krumm Relinquished By cooler Items/Reason

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Custody Transfer Remod/Lab Work Request

Assigned to \_\_

Received By

Client Contact **Gus Lo**Phone 1-800-821-4528

RFW Contact Christopher W. Knumm.
Date Due 12-27-87 (Holding Time)
Project Number 0628-1402

		SAMPLE IDENTIFICATION	TION			ì		ANALYSES REQUESTED	QUESTED	
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Test of t	% % %		
04-406-8001 Selfridge AUGB	1 Seffridge	AUGB soil boring sample soi	Soil	12-20-87	500 ml iar		X	X		
04-406-8001 Selfridge, AVGB	Selfridge A				2 40 m) via	X				
04-406-B002	•	soil boring sample			500 ml iar		X	Ý		
04-406-8002		,			2 HOM! VI'a	X				
CH-406-BOD3					500 ml lar		X	X		
CH-406-BODS					2 40m/ via	X				
04-407-8001					500 ml lar		X	X		
04-407-8001					2 Hom/ vial	X	,			
04-407-8002					500 ml 'ar		X	X		
04-407-8002					2 40 m ria	X				
04-407-8003					500 M/ LAF		X	X		
04-407-8003					2 40 m 412	X		,		
04-408-8001					500 ml iar		X	X		
04-408-BODE		ŕ			2 40m Vial	X		,		
1018-804-40		•			500 ml lar		X	X		
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Special Instructions:

DS- Drum Solids DL- Drum Liquids X- Other S- Soil
W- Water
O- Oil

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	Date	48/12/1			
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Custody Transfer Read/Lab Work Request

Phone 1-800-82/-4528 Client Contact Gus

RFW Contact John D. Olander
Date Due 12-38-1787 (Holding Time)
Project Number 0638-14-02

**ANALYSES REQUESTED** Misher 火 X X χ Matrix Date Collected Container/Preservative VOH Petc X X X X 2-40 MI vial 8-40 m Vijal 04-408-BOOR Selfridge ANGB Soil boring somple Soil 12-21-87 | 2 - 40 ml vial 2-40mTvial 2-40 nd vial 2-40 ml vial lar 2-40 m/via أور 500 ml jar iar 40 MI VIA 101 500 ml via 500mliar 2-40m 500 m 500 m 500 m 500 ml 500 ml 12-21-87 04-408-BOD Selfida ANKB Soil bring Soil SAMPLE IDENTIFICATION Bhahh Client ID No. 04-409-BODZ MS 04-409-BODZ MS 04-410-B003 24-410-8003 24-410-B002 604-410-Bbo 2 1008-016-60 04-410-BIDZ 04-410-B162 64-409-BOD3 E008-804-40 04-410-13001 04-409-Bobi 04-408-800 04-4/0-830 Sample No.

Soil Water Oil

Special Instructions:

W- Water DL- Drum Liquids O- Oil X- Other		1 S W	Matrix Spike	ide x	ઇ	120	30320-66	O	
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Custody Transfer Regulary AVLab Work Request

Client Contact Augustus 40
Phone 1-800-821-4528 Client Contact Augustus

Assigned to \_\_

Received By

Date\_

RFW Contact Christopher W. Date Due 13

120434-43

ANAI YSES REQUESTED Project Number

		SAMPLE IDENTIFICATION	TION			-	2006	ANALYSES REQUESTED
Sample No.	Client ID No.	Description	Matrix Date Collected		Container/Preservative	A2/1	Hert Hara	519W
04-408-803	Selfridge ANGB	6B Soil Reving Sample	Soil 12/22	12/22/87	SEE MIJAP		X	X
04-408-80N3	Sethidge ANNB	04-468-8003 Selfridge ANNB Soil Boriny Sample		2/87	2 122 187 2 40 ml Vials	X	X	
D4-409-8003	`			,	500 mliar			X
04-404-803	,				2 40 m/ Wals	X		
1008-111-40				7	SOO MI JAP		X	×
04-411- BDD1					2 HOMI VIELS	X		
24-411- BODINS	5			-	500 m/ 12r		X	X
24-411-BODIMS	5	•			2 40 m/vials	X		
34-411-8002					500 ml 12 P		X	X
C4-411-B003					2 40 ml vials	X		
04-411-8003					500 ml var		X	X
S4-411-B003					2. 40 m/1 vials	X		
1008-11- HO					500 ml iar		X	X
SH-412 - BODJ					2 40 ml vials	X		
2008-214-40					500 ml var		X	<u> </u>
04-412-8002				, ,	2 40 ml 41/2/5	X		
54-412-8003				,	500 ml iar		X	X
54-412-8003					B 40 ml vials	X		
04-412-8303		Trip Blank	_ ع		1 40 ml vial	X		
Matrix: S- Soil DS-	DS. Drum Solids	Special Instructions:			•			

DS- Drum Solids DL- Drum Liquids X- Other S. Soil W. Water O. Oil

Date Received By Relinquished By Items/Reason Time Date Express Received By Relinquished By C. E. Items/Reason esoler

uest / 37082 (\$	Contact Chris Crumm	Date Due Jan. 11, 1788 (Limited to 11, my	Project Number O628-14-02	ANALYSES REQUESTED
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Special Instructions: DS. Drum Solids DL- Drum Liquids X- Other S. Soil W. Water O. Oil

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Custody Transfer Red / Lab Work Request 121084

Phone 800-871-4528 Client Contact 6-us Ko Client WAF OCHL

RFW Contact Chees topher, 12. Krown Project Number 0628-14-02 Date Due

		SAMPLE IDENTIFICATION	ATION			1		ANAL	YSES R	ANALYSES REQUESTED	
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	POV	PEtro	Phylic 1863	Fox		
04-41313003 Sel tridge	Seltinge	25-30	3	1-5-87	1-5-87 2-4041 Gol	X	•				
6015151103	)	->			2-4041 601	×					
04-41313003					1-50041 Gol		×	χ			
04-413 13 13 13		>			1-50041 Gol		×	X			
1008111-60		2-3-			2-4041 Gool	×					
100041414-40		<b>→</b>			1-500m/601		X	X	1		
2009111-10		3-5			2-500 m/ 60/				X		
10051511-40		HUR 00-5-10 MS			A-4041 Gol	×					
1008 514-40		<b>/</b>		·	1-500M1 601		×	X			
04-415B001		510-			2-4041 601	×					
1002-417-60		^			1-50041 Gool		×	X		•	
04-41513002		15-70-			1-40ml 1001	( <b>X</b> )					
20081914-40		<b>^</b>			1-500m/60/		×	X			
04-415 B003		25-30			2-4041 Gol	×				·	
04-415 13002		<b>-</b>			1-500ml (col		×	×			
5000 HIL-40	•	13-18-			7-4041601	X					
5-414-13003					1-500m1601		×	×			
4-414-Bay		23-28			3-4041601	×					
4-414 BOOH		7			1-500ull Gal						
									·		
Matrix: S. Soil DS.	DS- Drum Solids	Special Instructions:									

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DS- Drum Solids DL- Drum Liquids X- Other Soil Water Oil

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					•			
1-6-8	Mand Last			16.00	16.66	Fed Ex	C.w. Kounn	1-600 ler
Date	Received By	Relinquished By	Items/Reason	Time	Date	Received By	Relinquished By	Items/Reason

Time

Received By

Custody Transfer Remark Lab Work Request 12/269 - 80 Client 354F 0644/75 RFW Contact Chrishohm Kannage 12

Client Contact Cus Lo SAMPLE IDENTIFICATION

Assigned to\_

Date\_

Phone 800 -821-4528

RFW Contact Christopher Kruu Project Number 0628-14-02 Date Due As per contract

			SAMPLE IDENTIFICATION	NOL										•
	Sample No.	Client ID No.	Description	Mately					ANAL	YSES F	ANALYSES REQUESTED	STED		
>	10 K		1.1.1			Date Collected Container/Preservative	NOA	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Faco BNA 42		77	20	Metal	.6%
•	1000-011-00		Del tridge Dail Doring Samples	S	1-7-88	1-500ml Gal		. ×	×		Т		X	3 7
)	7 52-418-8101	-	2-0-5			1-400.11 Carl		1		4	( )	(		V
Ź	V03-419-Bool		7			loon man		$\langle$	×	X	X	X	X	X
7	1000-414-12001		116	F		1-200M1 (00/		X	X	X	X	X	×	X
, 2	V 03-419-BO2		2-2	I		1-500m/ Cool		×	X	X	×	×	X	X
	70.00					1-600m/ Cool		×	×	×	۲	۷	, ,	١,
•	02-418-60		5-10-			2-4041 God	×				1	1	4	1
7	1018-816-50		4-10			4 110								
7	V 03-419-801		110			A-4041 (00)	X							
*	* A3-010-B101					2-4041 Cool	X							
<)	1000		113 O-5-	1		2-4041601	×							
	75002		5-10			3-40.41 Cal	×			1				
K	03-418-3002		15.20			1 30 1				1			1	
<b>-</b> 9	23-418-13003		16410	1		d- 1041 600/	X							
	2003 914-60		27-20	1		7-40m/ Cool	×							
`	03-470 30		25-20	#		2-40416001	X							
)	02 150 000		2-4	7		2-40m/601	×							
)	2005/07/5-60		9-8'	1		2-404/601	×							
)	5005027-50		30-35			2-4041 lool	×			T			-	T
7	03-418-13002		1.5-20			1-Km.11 /		>	>	1	;		1	T
1	103-418.002		75-201	$\vdash$		1001 mass		X	<	X	X	X	X	X
``	102-010 Box		00-00	+	1	1-500 MI GOL		X	X	X	×	×	×	¥
7	1		02-20	<b>&gt;</b>	>	1-500m1601		X	×	X	X	X	X	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
•	100000												-	Ī

Special Instructions: DS- Drum Solids DL- Drum Liquids X- Other Soil Water Oil Matrix: S- Soi W- Wa O- Oil

\* COL IN appears to be in anor (03-419-B101 MS)

0430 Time 88.81 Date 8x 1-8-88 Bottles indicate that 10 should be (03-419 BOOI MS) Relinquished By Pol Ilems/Reason 19:00 Time 1/87 Date **Received By** Relinquished By Soil Sauples C.W. Francy Items/Reason

RFW 21-21-001/A-3/86



# Custody Transfer Remod/Lab Work Request

Assigned to \_\_ Received By

Client Contact 605 Lo

Client JSAF OCHL 175 Phone 800-821-452B

REW Contact Chais topher w. Frium Date Due As 12er Contract Project Number 0628-14-02

1			SAMPLE IDENTIFICATION	TION					ANAL	ANALYSES REQUESTED	EQUES	STED		•
1	Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	VOA BNA	4221	Metal Screen	A5	149	5c	1/2 lois
>	05-416-13001 Seltridge	Seltridge	Soil boring sauple	3	1-6-87	1-500411601		×	ید	X	X	λ	X	X
7	20021-916-50	,	15-20					×	X	X	X	X	X	X
7	~ 25-416-3102		Pepliak 15-20					×	X	X	X	X	×	X
2	V 05-416-12002		25-30			->		. ×	X	X	×	X	X	×
7	1005-416-3001		5-1			2-40ml 6001	X					-		
7	V05-416-3002		,07-51				×							
>	V 05-416-1310Z		Replicate 15-20				×							
7	V05-416-13003		75-30			->	×							
7	105-417-3001		8-91			1-500m1 Gol		X	×	×	×	×	×	X
7	V 05-417.13002		,61-11					X	×	×	×	×	×	×
	2008-714-20		MS 14-19-					×	X	×	×	X	X	. ک
	06-417-13003		.57-12.			>		X	X	X	X	X	乂	X
<u> </u>	1008-417-8001		8-41			A-4041 Gol	X							
7	7008-111-50		14-19				X							
2	7002.111-50		MS 14-19'				X							
7	105-417-13003		<u>_52-h2</u>	>		>	×							
2	V05-417-B301	<b>→</b>	Trip Blank	3	<del>)</del>	1-40411 Col	×							
			-											

Matrix:

Special Instructions: DS- Drum Solids DL- Drum Liquids X- Other S. Soil W. Water O. Oil

1430 Time 1-8-88 Date Received By Relinquished By Items/Reason 19/48/19:00 Time Date Received By C.W. Krum Relinquished By 1/A-Items/Reason Saurples

K-10



Custody Transfer Regrd/Lab Work Request

Assigned to\_\_ Received By

Date

12126 88. RFW Contact

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STED	Wetals Mois	ኢ	X	X					$\dagger$	$\dagger$	$\dagger$	+	1				-	-	
REQUE	Se	X	X	X					1		$\parallel$	+	1						
LYSES	Ŧ	X	X	×					+		$\dagger$	+	+	+					_
	45	×	×	X								$\dagger$	†	$\dagger$	+	1			
	Hyllo 1314	X	X	X									$\dagger$	+	1	+	+	+	
120	14. 19.	1	- 1	×										1	$\dagger$	$\dagger$	+	+	
Container/Preservative	1-400,111	1-200 11 (00)	1-100 1 (co)	1000 monte															
Date Collected			>																
Matrix	5		7					1	$\perp$	$\int$	$\int$								
Description	03-40-1201 Seltinge Soil Samples	•	4																
Client ID No.	Schridge		7			-									+	+			
Sample No.	10021-02-100	03 470 Booz	2-140-0403																Matrix

Special Instructions: DS- Drum Solids DL- Drum Liquids X- Other Soil Water Oil اہخۃ

		ξ,	Jan Jack 1-8-88 1420		
	Relinguished By	Fr. sv	1		
	Items/Reason				
	le Time	00:31 88-1-1		1	
	Received By Date	Fed Ex 1-74			
llems/Reason Religentation	Yail A	Salpes C.W. Kowell			RFW 21-21-001/A-3/86
					Œ

12/3/8-81 Christopher W. Krumm

Custody Transfer Record/Lab Work Request Received By \_

Client USAFOEHL

Assigned to\_

Date\_

Phone 1-800-821-4528 Client Contact Augustus Lo

RFW Contact Christopher W. Project Number O628-14-02 Date Due \_\_

		SAMPL	SAMPLE IDENTIFICATION	TION			}		ANAL	ANALYSES REQUESTED	EQUES	STED		
Sample No.	Client ID No.	Desc	Description /Time	Matrix	Date Collected	Container/Preservative	700	Pet	metal	Ac	7	20	Soil	BNA
05-421-8001	Selfridge	0-5	/ /10:55	S	1-8-88	500ml lar /cool		X	I	X	X	X	X	X
05-421-BOOL	,	0-5,	110:55	-		vials,	X							
05-421-B002		10-15				500 ml iar /cool		X	X	X	X	X	X	X
D5-421-B002		10-15	81:11/			(2)40 mirials /cool	Χ							
05-421-8003		25-30'	0, 111:57			500 ml, ar 1001		X	X	X	X	X	X	X
05-421-B003		25-30'	0, /11:57			(2) 40 m/Vials/cool	X							
02-422-8001		0-5'	/11:30			500 ml iar 10001		X	X	X	X	X	X	(
02-42-8001		0-5'	/ 11:30		0	(2) 40 ml Vials 100	X							
03-422-8002		2-10,	[12:03			500 ml iar /cool	•	X	X	X	X	X	X	
02-412-8002		2-10,	112:03			(2)40 ml viuls (col	X		·					
02-422-B003		25-30	14:35			500 ml iar 16001		X	X	X	X	X	X	
02-427-8003		25-30	114:35		0	2)40 m/vials/cool	X	,						
1008-524-20		0-51	115.50		,	500 ml iar (co)		X	X	X	X	X	X	
02-423-8001		0-5,	115:50	7	0	2) 40 ml vials / cool	X							
1018-77-20		0-5'	115:50			500 mliar /col		X	X	X	X	X	X	
02-423-8101		,5-0	115:50			2)40 m) viels 1 cool	X							
02-423-8480	<u> </u>	15-20	16:00			500 ml ian 1000		X	X	X	X	X	X	
02-423-8002		15-20,	00:91				X							
02-423-8003		20-25	80:91			500 mliar / cool		X	X	X	X	X	X	
02-423-8003	4	,52-02	80:01/	>	1	2)40 ml rials /ccol	X							
Matrix: S- Soil DS-	DS- Drum Solids	Special Instructions:	uctions:				ŀ							1

DS- Drum Solids DL- Drum Liquids X- Other S- Soil W- Water O- Oil

ltems/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
Boler	(br) Howler	Ledral Eroun	00-21 25/6/,	1700			11811	11.88	1:48
			/					2	1
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<b>■</b> \$3!
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Received By

Date

Assigned to\_

Custody Transfer Record/Lab Work Request

Client USAFOEHL /75

RFW Contact
Client Contact Augustus Lo
Phone 1-800-821-4528

Project Numl

Date Due 1/16/88 (Hold) Project Number 0628-14-03 RFW Contact

Sample No.			Matrix	Date Collected	Container/Preservative	VOC	Pet	Mekal	As As	ANALYSES REQUESTED	STED	1:05	KOA
02-434-8001	Settridge	0-5 / 4:40	S	1-9-88	500 m 1,000		X	X	X	X	X	X	1000
03-424-B001		0-5 / 9:40			رفع	X							
02-424-8002		10-15 / 10:10					X	X	X	X	X	X	
02-424-8002		10-15 / 10:10			1-	X							
02-424-8003		20-25/10:28			500 m 120 /000/		X	X	X	X	)	>	T
02-424-8003						X						1	
08-425-B001		5-10' / 9:30			500 m 120h			X	X	)	<b>\</b>	·	
08-425-8002		10-15' 19:45									X		
O8-425-BO03	->	20-25/10:15	>	>	>			X	$\phi$	$\overline{\Diamond}$	1		1
CB-426-B001		17	_	-	500 ml cook	-		$\langle \rangle$		( >	(>		*
CK-426-3003		10-12,1 1440			*			X	\ \ \	d x	4>		<   x
500-924-80	>	25-301/ 1505	<b>\</b>	>	,			X	; ;	() X	<>	1	4>
02-424-8308	7 %	Trio Blank	S.	38-6-1	1-40-11	>	T	1	$\downarrow$	1	4		4
					Tanka Kan	+	$\dagger$	$\dagger$	$\dagger$	1		1	
						+	1	+					
			1/			$\frac{1}{1}$	$\dagger$		$\dagger$		1	1	T
									$\dagger$				
						$\forall$	1/			+			T
								f	$\dagger$	1/			T
						-	$\dagger$				1	$\ $	
Matrix: S- Soil DS- (	DS- Drum Solids	Special Instructions:					1	1					/

DS- Drum Solids DL- Drum Liquids X- Other S. Soil
W. Water
O. Oil

	Time	1		_	-	-
_	Date	18/7	# 02/			
	Received By	Marie Jack	The I was all the			
Relinguished Bu	inclinidation of					
Items/Reason						
Time		19/2 17co				
Date		49/6/				
Received By	10	Februalasuro				
Relinquished By	The state of the s	In Marke				
Ilems/Reason	000	-Caser				_

RFW 21-21-001/A-3/86

# Custody Transfer Record/Lab Work Request

Client Contact Augustus Phone\_\_ Received By \_\_ Assigned to\_ Date\_

RFW Contact Christopher W. Krumm Date Due \_\_

		SAMPLE IDENTIFICATION	TIFICATIO	7				ANAL	<b>ANALYSES REQUESTED</b>	EQUES	TED			1
Sample No.	Client ID No.	Description	Matrix	x Date Collected	Container/Preservative	NOC	Pet	Meta!	As	Ha	50	501.1 Mo15	BNA	FP
08-427-800	Selfridge 5-10'		09:00 5	1-10-88	1-10-88 500 ml jar /cool		,	X	X	X	X		X	
08-427-BODZ	,	10-15, 100	09:16		, 1,			X	X	X	X		X	
68-427-803		15-20, 1 09	09:36					X	X	X	X		X	
1008-824-70		5-101 / 04	09:56		^		X					X		
1008-82H-40		5-10, 108	05:50		2/40)m/ Vials /eco/	X								
07-428-8002		01 / 51-01	10:13		500 ml iar 10001		X					X		
07-428-B002		01 / 51-01	10:13		2/40) m/ Vials/cos/	X								
C7-428-B102.		01 /, 51-01	10:13		SDOMI iar 10001		X					X		
2018-824-CO		01 / 51-01	10:13		2) 40 ml Vials leool	X								
D7-428-B003		20-25, 110	10:33		500 M inc/cop/		X					X		
67-428-8603		30-25' / D	10:33		Z) HOW Wals lecel	X								
P-428-B004		5-10' 10'	09:56		2) 500 ml jars /ccol									X
1008-821-10		5-10' / 13	3:36		500 ml is 1 col		X					X		
1008-864-70		5-10' / 13	3:36		2 (40) alviels/col	X								
07-428-B002		10-15, / 18:	19:47		500 mljar/cool		X					X		
5008-94-FO		10-15' / 13:	3.47		2 (40) m/ vials/cool	X								
07-429-8003		25-301/ 14	14:25		500 ml iac/cool	-	X					X		
07-429-8003		25-30 / 14,	14:25		2 (40) M Vials (co)	X								
07-439-8303	7	Trip Blo	Blank 1	7	1)40 ml vial /cal	X								
		,	-											
Matriv														

Matrix:
S- Soil
W- Water
O- Oil

Special Instructions:

DS- Drum Solids DL- Drum Liquids X- Other

Time	1315			
Date	1/12/88	-		
Received By	( raul Jako 1/12/98/1315	00		
Relinquished By	Fed LKD			
Items/Reason				
Time	00,41 8811			
Date	1/11/88	1 ,		
Received By	Kumm Fed Exp.	,		
Relinquished By	CW Kumm			
Items/Reason	1 cooler CW			



Custody Transfer Record/Lab Work Request

Client Contact Hugus fus Lo Phone 1-800 - 821 - 452P SAMPLE IDENTIFICATION Assigned to \_ Received By Date\_

RFW Contact Chris Krumm
Date Due 1/31/58 (Holding Time)
Project Number 0628-14-02

	6110	118	)														/	
	2ND	2002	>	1				+	1	1	+	+	$\dagger$			/		-
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REQUES	Ho		>	(										/				
<b>ANALYSES REQUESTED</b>	4		>	<									/	1				1
ANA	Pet Metal	200	×										1					
	Pet		X	1								/						1
	400	_		X	1						V							
	Container/Preservative	-40 mIVOA les	Do mliarford	TAN. 24, 188 1 -40 m/ 184/00														
	Date Collected Co	JAN. 24,88 2-40 m1 VOA /c.	TAN 24.88 6	JAN. 24, 188 1					/	_								
ATION	Matrix	S	8	3														
SAMPLE IDENTIFICA	. Description	15-201/ 1400	15-201/ 1400	Ble				/										
	Cilent ID No.				•													
Comple Me	Sample No.	01-363-BOUI Selfidie	01-363-8001 Selfridge	01-363-BOOI Selfridge												•		Matrix

DS- Drum Solids DL- Drum Liquids X- Other Soil Water Oil တ် ≴်လ

Hems/ Heason	Helinquished By	Received By	Date	Time	flems/Reason	Relinquished By	Received By	Date	Time
/cooler	Jan D. Olanber	Led Express	008188/52/,	1800			X 40000	131.101.101	01.77
								70 5	77.77
	•								

Custody Transfer Remod/Lab Work Request

Received By

Date

Assigned to.

Client Contact Augustus 10
Phone 800 - 821-4528 Client USAFORHL/TS

RFW Contact Christopher W. Krumm

123086-89

Project Number OGAB - 1402 Date Due \_\_\_

**ANALYSES REQUESTED** 

# 06-347-M301 Ŝ Se READS SAMPLE As Pet Metal DOTTE. 70V Matrix Date Collected Container/Preservative 2) 40 mluials 500 ml ( Mr/ (44) 11/88 500 ml jar/cool (2)40m/vin/s 500 ml jac/2001 (2) 40 ml vin) s 40 m VID 88/ 88 8 28/2/2 88/2/2 38/2/2 SAMPLE IDENTIFICATION S S Ś 15:05 15:05 16:50 14:27 4:24 116:50 Trip Blank Description 10-15 FT 5-10 ft 5-10 ft 10-15 ET 10-15 Ef 10-15 57 Sthidge Selfridge Selfridge Selfri) se Client ID No. Scotraing 26-345M001 / Selfindy Selfecture 06-345-A001 06-347-8001 06-347-830 01-254-MO01 06-347-800 190M-425-10 Sample No.

Special Instructions: DS- Drum Solids DL- Drum Liquids X- Other Soil Water Oil

Matrix: S- Soi W- Wa O- Oil

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Time					
Date					
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Items/Reason					
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Items/Reason	1 600				w 21
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	Received
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Custody Transfer Regret Lab Work Request

Assigned to

Sample No.

Date\_

Client Contact Augus hus Lo Phone L-800-821-4528

Request

RFW Contact Christopher W. Knumn

Date Due 2/10/88

Project Number 2628-1402

Se Mais RAL **ANALYSES REQUESTED** 113 Pet Metal Matrix Date Collected Container/Preservative 2 (40ml 500 m 40 m 2-3-88 SAMPLE IDENTIFICATION 15-20 Ft /1700 hrs 15-20ft 1/200 hrs Trip Blank Description Selferelge Client ID No. 01-261-HOO

01-261-42 01-261-Hoay

Special Instructions
Spec
1 1 1
Matrix:
, A

DS- Drum Solids DL- Drum Liquids X- Other Soil Water Oil 'nżċ

		Time										
		Date										
		Received By										
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	Heme/Bescon	TOEBS HERSON										
	Time		ויכת	1/3	1	5/8/9/55						
	Date	-	2/4/00	2	1 / / /	45/19	1					
	Received By	, ,	Latera / The		17	Land 12 Marie	1	0				
	Relinquished By	111111111111111111111111111111111111111	( Hallton ) Kolima									
O' omet	Hems/ Reason		3000							_	DEW 21 21 21 22 22 11	Nr vv 21-21-001/A-3/86

Custody Transfer Re Jd/Lab Work Request 12765/
Client USAFOEHL / TS
RFW Contact C.W. Krumm
Client Contact Augustus Lo
Date Due 4/12/88 (Holding Time) Amions NHz TOC NO Metal As/b H9/6 Project Number Oba8-140 Z **ANALYSES REQUESTED** Received By Relinquished By AIK · court Phone 1-800-'821 - 4528 Matrix Date Collected | Container/Preservative liter plastic 10018 Liter plastic / H. SOx 250 ml amber /4,504 500 al plastic 14,50u Liter plaste/HNO3 11 For plastic/11, Sy 250 ml ambor 11,500 500ml plaste 11156 liter plastic liter plastic Items/Reason 88-9-H 0081 88/1/2 Time 4-6-88 Date SAMPLE IDENTIFICATION 3 3 9660 Received By Groundwater 11:15 Description Special Instructions: 01-122-1101 Seffrige AVGB Grandwater Received By Assigned to. Relinquished By Date\_ 01-122-M601 Selfridge ANGB Client ID No. DS- Drum Solids
DL- Drum Liquids
X- Other Mit was Items/Reason Sample No. cooler -001 Soil Water Oil K-18

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No.			Custody Tra		nsfer R	) M	fer Regulation Work Regulact	Tallest Region		61	
Manage Carporation		ved By			Clier	ILSA II	FOEHL/TS	RFW Cont	0		* 4
	Date_ Assig	DateAssigned to			Clier	it Conta	Client Contact Augustus Lo	Date Due 4/1	1/12/88 (Ho Wing)	HOS Time	
		SAM	SAMPLE IDENTIFICATIO	ATION				•		TEO 1	
Sample No.	Client ID No.	ā	Description	Matrix		Date Collected	Container/Preservative	Pet Purpe	Pet BNA		7
01-122-M/01	Settidae ANGB	Groundwater	Water /11:45	3	4-6-88		2) 40 ml vals/HCe	X	1	300	
				1					XXX	0KH/10/8	2
>	*		_	>	7		Yzgal amber /cold		X	×	
01-122-4001	Selfridge ALKB Corounduater	Ground	uater/11:15	3	4-10-	88	2) 40 m vials /HCD	Χ			
						J	950 ml anhor/14, Sh		V		/
>/	*		>	>	>		Yz gal amber Joolo		X		
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RFW 21-21-001/A-3/86	/86										

12764" Page 1 of 2.  1est  Contact C. W. Krumm  Une 4/12, 188 (Holding Time)  It Number 0628-1402	200 TOC NOW METAL AS / H9/	loo long screen	X	) X	X		X	XXX					/	<i>;</i>		Received By Date Time	pina 4.1/18
Reques RFW Cont Date Due	A/K Commy	X			X	X			98	77.17	3					Relinquished By	
la 16 ler R rullab Work Client USA FOFHL/TS Client Contact Augusfus Lo Phone 1-800-821-4528	Container/Preservative	lastic.	1 [i ten plastic/115.504 250 m/ambor/115.504	lastic/	liter plastic /HNB	plastic/	250 ml pmbt /11,50x	plastic 1		0-4	· \					Items/Reason	
Client Conta	Date Collected	88-9-н			V-6-88	+		>								Date Time	00,71
Custody Tra	Description	Ground water 109:00 W			Ground water /08 50 (1)			7		1					Special Instructions:	Received By	Federal Express
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S. C.	A			Sample No.	156-mal	-Mool				01-125-MOOI													\		Items/Reason	49/				-001/A-3
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rage Lot		Project Number 0628-1402	ANALYSES REQUESTED	BWA		100	X	0.0	0	X										/		Received By Date Time	4 (hru Saino 41/82 1140			
Nork Bosings		-4528 Project Number	ANAI	Pet Punge F	X	H. 50,	to lol	XXXXX	H.S.	hold		700	02,									Relinquished By	J.		•	<b>コ</b> 
r Ré Tuyllah V	Client USAF OEHL/TS RFW Contact	Phone 1-800-821-45		Date Collected Container/Preservative	4-6-88 (2)40ml vials /	950 ml amber /	Yzgal amber/	ml vials/	950 ml amber 11				1.11	1							-	Time Items/Reason	(2,'A)			 
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nsfer	Client USHFO	Phone 1-800-821-45	ŀ	Date Collected Con	H(8) 88-9-H	9.50 ml	7	20-	× ×	ल	(E) 88-9-H					U	7						Time	00:61			
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SON CONTROL OF THE STATE OF THE
TLab Worth Lab
Ster ( Start Lab Work Client USHF OEH L TS Client Contact Augustus Labor Phone 1-800-821-4528  Date Collected Container/Preservative Pet 950 ml auker/H, 24 4-6-88 (2) 40 ml vials/HCl X 90 augustus/H, 24 4-6-88 (2) 40 ml vials/HCl X 90 augustus/H, 24 4-6-88 (2) 40 ml vials/HCl X 90 augustus/H, 24 4-6-88 (2) 40 ml vials/HCl X 90 augustus/H, 24 4-6-88 (2) 40 ml vials/HCl X 90 augustus/H, 26 (2) 40 august
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<del>ر</del>ر Holding Time Authorable Aromotics galle Time Date Project Number 06 28-1402 DUNO Hulse berus RFW Contact C. W. Knum My **ANALYSES REQUESTED** released Received By 88 u Chome 127697-98 131 Date Due Rednest Coned Relinquished By Matrix Date Collected Container/Preservative A/K Custody Transfer Re\_\_/d/Lab Work 127693-95 Client Contact Augustus Lo Phone 1-800-821-4528 4am Vodo/HCL HNOS 140 - 1 YOK5/HCL HNO. 2)40m 14045 /4CL 2)40m/YOF/1K-L 100 112504 142501 2)40m/VOV/HC Items/Reason elethi 1 Lebertic Meter 950 ml, 950m Late Mich States Frace Time 88/4/ 188 11/2/88 17/88 7/88 Date 4 3 3 SAMPLE IDENTIFICATION Received By 0350 Special Instructions: 1000 1020 Description 1020 1000 1020 Received By Assigned to. GW. 00 6.4. 6.10. 6.0 GW2 Relinquished By Who year 0000 865 DS- Drum Solids DL- Drum Liquids X- Other SLFRD 02-166-MOON SKFRD Client ID No. 02-165-MO1 56 FRD 02-14-MOOI 51FRD 02-164-4001 SLFAD 02-165-MOU SLFRD 1004-591-20 Items/Reason Sample No. Soil . Water Oil Matrix: K-28

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	3		Sample No.	05-M				- M8				$/\!\!/$												DS- or DL- x-	Reason	er				001/4.3
2/5	West		Sam	02-165-mad Selfide Adol Grandwher			7	02-110100			1/	/												Matrix: S- Soil W- Water O- Oil	Items/Reason	Cooler				BEW 21-21-001/A-3/86

Custody Transfer Re d/Lab Work Request

Client USMFGE HL/TS

RFW Contact D. Olander Time Date Due April 14, 1988 (Holding Time) 82/8/4 Date Comm. Metals Coniens Scrand **ANALYSES REQUESTED** grana Project Number 028-14-02 Received By X A K Container/Preservative Purge Pet Ret - Mutrix Spike Duplicate Relinquished By X 4-7-1988 (2) 40m1 VOA/125-140 X (2) 40 m 100A (ESS 1000 X 2) 40m (104/thou X 2) 40 mg VOH-16001XXX - Matrix Spike 950 ml ombor/H20 2)40pol 11019-/Ceol 1 liter plustic/ 11/103 950mlamber 11854 1 [ Herplastic] HANY 14.504 ८गर Phone 800 -821-4528 Liter alustic ////ND2 (iterplastic/114003 95Unlamber / 1450y liter plastic foold 1 ther plustic/cold 2/40m2 1/0/A/HCI Client Contact Augustus Lo liter plastic/ cold liter plastic Items/Reason 950 mlambel Matrix Date Collected 4-7-1988 0061 38/6/ Time 8851-2-4 3861-t-h 109W-911-EO 03-116-m501 Dale SAMPLE IDENTIFICATION 3 Loboul Gyours 17308 Received By 012 1725 1700 1705 Special Instructions: Description 03-118-1301 Selfridge Auco Troundunder Selfide ANCO Grandwiter Selfiele Michoroundunt Received By Assigned to Relinquished By Date\_ DS- Drum Sunce DL- Drum Liquids X- Other Client ID No. 9 798 Jen + man 03-116-M501 13-116-mbol 03-118 max 100W-811-E0 03-116-mag Items/Reason Sample No. coo ler Soil Water Oil Matrix: K-30

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	ב כ	ived By		Client 1254	Client USA FaE HL / TS RFW Contac	RFV	V Contact	G.W.	RFW Contact 6. W. Krumm		
	Date	Э	1	Client Contact 6ms	act leus Lo	Date	Due 4	14	88 Che	any tim	$\sim$
	Ass	Assigned toSAMPLE IDENTIFICAT	LION		Phone 1-800-821-4528	Proj	ect Numb	er 0628	Project Number 2628 - 4-02	, (	
Sample No. CI	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	AIK G	L'	ALTSES I	ANALTSES HEQUESTED	6 600	
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12780 - 308 10:30 Time Date RFW Contact C. W. Krumm Date Due 4/15/88 (Melynu) Now Metal As, P. B. **ANALYSES REQUESTED** Project Number 26-28 - 14-0 Received By Louise Tol Custody Transfer Re d/Lab Work Request Relinquished By Matrix Date Collected Container/Preservative 1125 Phone 1-800-821-4528 1. shids / 42502 11 shute (cold items/Reason Client Contact 645 ion ml Time 418188 88/8/4 Date SAMPLE IDENTIFICATION 3 M605 - Matria LAL Received By M 501 = Matrex xxile Special Instructions: Description 1645 Received By 6.1 GW. Assigned to Relinquished By 26-110-M501 109-4-011-90 DS- Drum Solids DL- Drum Liquids X- Other Client ID No. Wind llems/Reason Sample No. -001 Soil Water Oil Matrix:

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	necel Date	Received by Date		Client USA!	AF OFHLITS	RFW Con	C.W.	m m m	)	
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127805 JA7808 49881033 Time RFW Contact C.W. Krum m FFW Contact C.W. Krum m L/15/88 Cholling time) Date TOC NOW METER **ANALYSES REQUESTED** Project Number 0628 - 14-02 Received By anions WHS Custody Transfer Re A/Lab Work Request Relinquished By Matrix Date Collected Container/Preservative ALK Phone 1-800-821-458 500m | plete /4.50 250mlabethe 1450 11 state loss 16 Note 1 HNOS 950ml/H2504 Items/Reason Client USAFOEHL Client Contact Gus 150ml 1800 Time 4/8/88 W 4/8/8% 4/5/bx Date SAMPLE IDENTIFICATION 3 Received By 1415 Special Instructions: Description 1440 6.W. Received By Assigned to. 6.W. Relinquished By 100H-101-90 06-247-MODI DS- Drum Solids DL- Drum Liquids X- Other Client ID No. 0000 Items/Reason Sample No. Soil Water Oil Matrix:

Custody Transfe  Received By  Assigned to  Bescription  In the	SAFOEHL/TS  ontact Gus 6	ANALYSE	Date Collected Container/Preservative Ret. Purge 8MA	18/88 (2) 40m/ year/ 14C1 V		88	8 188 (2) 40m) VAS/41 /		K		The state of the s					Time Items/Reason Relinquished By Received By Date Time	1900 Mari Last 4981	
Custody Trans  MPLE IDENTIFICATION  Description  1440	SAFOEHL/TS  ontact Gus 6		Container/Preservative P. +.	(2) 40m/ yoks/14C1 V	Land ember /	$\dashv$					7					Items/Reason		
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7  $\overline{\mathsf{X}}$ 16 1988 (Holding Time) delete punglable Halocanbons Noc/L acut. d all the Time 88/11/2 Arona Hudway Hypro A/ka/ coming Screen See 1/3  $\overline{*}$ \* Date X Project Number 06 28-14-02 Dolander Jano **ANALYSES REQUESTED** 25-25-N006-25-70-Received By 127862 Date Due Horil RFW Contact Sette Seals# 00035D0 and #0004JDO Custody Transfer Record/Lab Work Request 127860 137859 Relinquished By \* Container/Preservative 1HN03 14003 88-6 240 nd JOA /14Cl 95UM amber/11554 २ ७ 250ml ambor 1450 Client Contact Hustrus 10 Phone 500 - 721 - 4528 950ml ambor/1450 500 ml plastic/11,504 2 olustic /HNO2 Relastic/cold 240 me UO A-1 14Cl 60 0 Items/Reason 2 plastic 2 plustic/ 12 plante Delastic, 4/9/85/17-02 Matrix Date Collected Time 88-6-6 88-6-4 M 88-6-h Date Gioven 3 3 SAMPLE IDENTIFICATION 04-251-mooi (Gronnductor/1340) 201862-06-144-MIDI Graundustry 1340 Received By 1407 Federal Special Instructions: Description Grandwater/ Received By Assigned to -Relinquished By Date\_ 127860. 04-253-mas DS- Drum Solids DL- Drum Liquids X- Other Client ID No. Items/Reason asiler Sample No. Soil Water ō Matrix:

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Request Request REW Contact J. Olander Date Due April 16, 1988 (14) Project Number 0628 -14-03 ANALYSES REQUESTED	£ 7 X	× *		1		1/11	6 nd #0002 J DO 04-154-M001	ed By	
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As As Client ID No.	2W-144-90	75					. Drum Solids Drum Liquids Other	Relinc	
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Sample No.	278	3786	$/\!\!/\!\!/$				rix: Soil Water Oil	COO Cr	RFW 21-21-001/A-3/86
<b>₽</b> .							Matrix: S- Sc VV	Ite	RFW 21.

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Date Assi					Client USAFUEHL/ TS	1	RFW Contact	ntact >			١.		,
	ned			Client Conf Phone 86	Client Contact Augustus 6. Phone 800 - 821-4528		Date Due <i>April</i> Project Number	Apr.	0628	Date Due <i>April 16,1988 (</i> ). Project Number <i>06,</i> 28 - 14-0,3	THBH'"	41/	
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R <sub>P</sub>	Date.	Ass		Client ID No.	55-M	04-255-Mov Graundwater				06-245-mool			4	100W-9H1-90			4							solids	Relinquished By	20		
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RFW 21-21-001/A-3/86

Custody Transfer Resident Work Request

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	/Lat	Angush	Phone X00-821-4528		Container/Preservative	1 plustic/	il plust	V amba	amber	1 Tolashic/	Labshic	amper	1/2 00 amber					E	1	/							g.	Items/Reason				
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USAFOEHL /TS REQUEST Christopher W	Date Due H-17-86 Project Number Ole 25	COMMEN	X			X			У			X	\			X			X	1		
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<b>∑</b>	15 Lo			HCE	#52x	cool	INCE	14.50	(00)	<i>#co</i>	14,500	1000/	HCD	30,	IKÛ	1000)	1400	37.1	3	1400	33.	+
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#F0	Client Contact Augustus Lo Phone 1-800-821-4528	Container/Preservative	liter	2 HOM! Viels/HCD	950 ml amber/1454	liter	2) HON vials/HCD	950ml amba/14,50	liter plastic	2) Malvials	950 mlamber	1 liter plastic	2) How wals	950 mlawfor /14.50x	2) 40 m/ rials 11100	lifer	3 40 m/ vites	950 ml auber	liter plastic /coo	2) 40 m/ Vials	950 mlamber /1450	
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<b>Z</b> Į		Clien	d/456/04-115-1101		*	12 1-04-115-MIOI		7	4 1425 " OH- 111-MODI		>	04-249-19001 Groundwater		>	04-115-11401 Groundwater	102 W-11-40	04-115-mao	>	04-255-ADDI Coroundwater			
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S- Soil DS- W- Water DL- O- Oil X-	DS- Drum Solids DL- Drum Liquids X- Other	Special instructions:							
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7 (0)	March stone	4-17-88 (Holding Time)	3-1402	ANALYSES REQUESTED	Purpe Pet	4	X	X		X	X		×	X	OF P	X	X									Received By Date Time	Man Lett 4/2/8 11:15			-
	ш	HFW Contact			TDS Contons A	χ			X X	<i>Λ</i> (		X	′		X X								/			Relinquished By			:	
	'd/Lab Work	CI Augustus Lo	821-45		Container/Preservative	11.ter plastic /cool	3) 40 MIVIAIS/HER	950 m Jamber/11,50	plastic/	2) 40 mlvids HCP	950 ml amber/H, 500	liter phasic level	2) 40 ml vials/IACR	950 ml amber /11,50,	. phetic	N Nals/	950 mlawfor 11500	_								Items/Reason				-     
į	Isfer Re	Client Conta	Phone 1-800-		Date Collected	4-11-88		>	4-11-88			88-11-4		>	88-11-4		<b>\</b>				2417					Date Time	4/11/89 1800			_  _  _
	Custody Transfer Re //d/Lab			SAMPLE IDENTIFICATION	Description Matrix	water/1045 W		*	dater 10920 W			water 10920 W	,	<b>→</b>	when 10920 W	, , ,	→ →			38-77-	$\int$			Special Instructions:		Received By	Falenal Express			
ころってんえん	Royalvad By	Date	ned	SAN	Client ID No.	04-150-mol Groundwater		>	04-112-M00/ Ground water			04-112-1901 Groundwater		\ \	04-112-1120 Coroundanter		>		1	7					Drum Liquids Other	Relinquished By	10 Slander			<b>一</b> 月
- ( _	W.				Sample No.	1279620			1474630		10/20	14.1964 0			1279650		•							Irix: Soil DS-	고×	Items/Reason	(cooler.			

Custody
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Transfer Reard/Lab Work Request Received By

Client Contact Augus Fus Lo Phone 1-800-821-4528

Assigned to

RFW Contact C. W. Krum M. Date Due 4/19/28 (Hold ing Time) Project Number 0628-1402

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		Container/Preservative	11.160	Lifer	250 mlamber/H,50,	Soo ml plashe H. So.	When plastic /HAD.	liter plastic/eold	liter	250 ml amber/H,50,	500 ml abstill,504	Liter plaste /HNO.	liter plastic /ald	1.40	250 ml autor 1854	500 ml plushic 111.50	Lites		(	M			
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	f	<u>o</u> 1	5	+	+	+			+		+	-	0	$\dashv$	$\dashv$		-	$\parallel$				H	
		Sample No.	X805					38049				<u> </u>	808					$\ $					
		<i>s</i>	7					10				-	10										Matrix:

DS- Drum Solids DL- Drum Liquids X- Other S- Soil
W- Water
O- Oil

Special Instructions:

and #00105D0

Time Date Relinquished By Items/Reason 0081 88/21/4 Time Date Federal Express Received By Christopher Koumm Relinquished By Items/Reason cooler

RFW 21-21-001/A-3/86

N Page Zot

Custody Transfer Read/Lab Work Request

Received By Assigned to

Date\_

W. S. J. C. J. W.

Phone 1-800-'821-4528 Client Contact Augustus Lo

RFW Contact C. W. Krumm Date Due 4/19/88 (Holding Time) Project Number Co28-1402

**ANALYSES REQUESTED** 

Pet BNA Purge Petro Matrix Date Collected | Container/Preservative 4-12-88 (2) HOMINIAIS/HCD 12 galamber 10010 950 ml amber/1650, 12 gal ambro/cell (2) 40 m | viak / HCD 950 ml amber 11.84 Yz gal amber /cold 950 mlamber/4504 (z) 40 md vials, 85-21-h 4-12-88 SAMPLE IDENTIFICATION 3 3  $\mathcal{E}$ 12605405-105-mool Groundwater 10840 1035 1125 Special Instructions: Description 01-261-mool Groundwafer 01-259-MODI Groundwater Client ID No. 6th 0281 Sample No.

Soil Water Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Seels #0009 JDD and #0010 JDO

97.11 Time Date Received By Relinquished By Items/Reason 8 Time 1/2/88 Date Expires Received By Federal Mumm Relinquished By Items/Reason cooler V 21

W. Consideration	Received By	Custody I		ransfer Re /d/Lab Work Request	Work Re	dnest	-	· ·		
	DateAssigned to	d to	Clien	Client Contact Laustus	Lo Dat	HFW Contact	HFW Contact July 1988 (Holding Time	8 (Ho	Wing 7	in
		SAMPLE IDENTIFICAT	NO.	6-130 mg	28	ject Number	41-8290	40-1	)	
Sample No.	Client ID No.	Description	Matrix Date Collected	lected Container/Preservative	_	ANA	ANALYSES REQUESTED	STED		
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		074/ Lamanum	28-21-40	7	-	X				1
				Hitropastic/11.50	11-504	Х				
				250ml amper/11550u	1250 V		X			
				500ml plustic/14,50,	(+35¢)		X		+	
128XCE	$\Gamma$	-	J	$\neg \neg$	11-NO2			X	^  x	Y
	US-235-11001 (STOWN WORKER	MM WORTH 1510	83-21-4 (7)	7	X	X				1
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				250ml amber	(H-50		X		-	
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1281 US	2 3			1 Property	14002			X		1
	VI-25 T- MOSI (STOUNDED LAND	industrial 1350	89-21-4 M	Hiter Alustic	XX					/
			+	Werplastic/14-50		X				
			+	250ml amber/1450	7054		×			
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128053	AU-IUS-WAL	211.00	4	7	1003			X	X	T.
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W- Water DL-	DS- Drum Solids DL- Drum Liquids X- Other	Sed	(s # 000	Seals # 000075DO and	#0008700	TDO				1
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	Client Contact Augustus Lo	\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \	Container/Preservative	CO 40ml VVA	gom/	Tegal	-	goon	roal	as 40 mg VOM	950mlamber	12 gal combon	Co 40 my vot	2340 ml VOA	850 mlamber	950 mlamber	(2) 40 m ( JOA / HC)		-	+				00	Items				Ī
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	Received By Date	ed to SAI		Grandwater/1420			Ground unfer			LOW			Sround weder	Fromburch er	Generalmater	Broundwater	Groundwer		$\Lambda$			$\setminus$		Special Instructions:	ly		and		
	Receiv Date	Assigned to		$\rightarrow$	$\dashv$	+	<u>ত্</u>	$\dashv$		5	+	-		<del>-4</del>		-		-	H			+			ished B	4	10)		
	E 0	∢	Client ID No.	01-263-11001		7	05-235-May	_	K	SP-II	1	7	18-mo	3-mo	100m-841-40	3-moc	W-S							Drum Solids Drum Liquids Other	Relinquished By	9000	2		
5	771		Clier	01-20			05-2			01-257-mool (Sroundwater)			100W-8H-40	04-113-mool	नन्भ	04-113-MODI	05-255-M30	1				1		Drum Drum Other		K			_
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ANALYSES REQUESTED		SAMPLE IDENTIFICATION	
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Date Due 7011 20 1988	Client Contact Pugushus Lo	e	Date
RFW Contact	Client US#FOF#C/ 15	received by	)au
S CF	1	D. C. C. C.	200

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Sample No.	Cilent ID No.	Description	Matrix	Date Collected	Container/Preservative	Physic	Petro 19160		775	Comm	TDS Comm Petro L Payl		1/3
198174	04-152-mon	04-152-may Graundwoter / 0915	3	13-81-4	4-13-88 (2) 40ml vo 14/461						1	•	3
			4		PSUM Amber/14, St.		X						
1000	>	>	>	>	111th plastic/ cold			X	X	X			
19010	05-134-mas	Graundwater 1840	3	4-13-88	B 40 12 404/14C1	X					X		
			-		950 ml amber/ Aza		X						
					1/2 gal omber / cold							X	
	,		4		1 liter plastic/ cold			X	X	X			
/		>	Y	>	250 mlamber / 1550								X
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S- Soil DS- W. Water DL- O	DS- Drum Solids DL- Drum Liquids	Special Instructions: S.R.a.		# 000	18 # 000 1508 and # 000 5611	#0	002	îi/					
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Ilems/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
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	Request  RFW Contact JO Olcander  Date Due April 20 1988 (h  Project Number Co28-14-02  ANALYSES REQUESTED	WHE	X						1					/					-	116	ed By				1
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_	17.p.	Container/Preservative	liter plustic/1259	Liter plushi	2) 40ml 10A/1K					7	$\frac{1}{C}$	/		ĺ							Items/Reason				
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	stod	tion	Groundwater JOB40	-	0840	-								1							Received By	Ledrall			1
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	ived		Sim		3 Water											V				Specia	d By	arler			
	Recei Date_ Assig	No.															1			ids	Relinquished By	Danle			
		Client ID No.	05-134-mool	1	05-134-M30		//													Drum Solids Drum Liquids Other	Reli	To the second			
-	W. South	o o	1250		260	.	1					$\dashv$		+	+	+	1	*		0S- C	1	ber (			7,105
1	1.50 A	Sample No.	381.		387														X	Matrix: S- Soil W- Water O- Oil	Items/Reason	Cooler		,	
	· \$3!	Ľ			17														7	o ≰ s Mat	L				, AL

08-127-MOOI has two 950ml BNA buths Water sample 08-127-M201 has two 950ml BUM 3 Date Due April 24, 1988 (Holding Trine) Time Date Alked anions Acidity Screen Asist BNA RFW Contact JD Okinder Project Number 0628-14-02 ANALYSES REQUESTED Hem Lost Received By Custody Transfer Record/Lab Work Request Relinquished By 9 Client Contact Hugushus Lo Matrix | Date Collected | Container/Preservative (14103 literpoly/14/03 2)950mlamby/col 2)950 ml omber/co 12 gal ambertuo Phone 800-821-4528 200 liter poly/com Hiterpoly 1000 2) Bond amber Ilems/Reason liter poly Hiber pely Hiterpuly #005954 0081 80/6/ Time 28-61-17 33-61-1 88-61-4 4-19-88 Date SAMPLE IDENTIFICATION 3 3 3 Fabral Gyrus Seal (500 1500 Received By 08-127-M20 Ground water / 1440 DE-127-MIDI Graundwater / 1500 08-127-MIDI Grunduxter/ Special Instructions: Description 08-127-made Graundweter Received By Assigned to. Relinquished By Client ID No. DS- Drum Solids DL- Drum Liquids X- Other RFW 21-21-001/A-3/86 2852 128522 Sample No. Items/Reason 12852 Coole Water Oil Soil 8

K-49

Time

Date

1. J. Houmm	Project Number 0628-14-01	ANALYSES REQUESTED	8	\ \ \				\ \ \ \										Received By Date Time	1 SACE WESTER	the the the		
fer Re 1/Lab Work Request	Project Nu	Pet Puese	70	70	5.0x	700	757		76	X	70%	150	7	88-77		11 /01/	0012 65K	Relinquished By				
VSAFOEHL /	123	sted Container/Preservative	35 (2) 40 - 1 10 / 1/1.	250 Leady / 11.50	From front the	20 VOAS/14	250 - Jen 100 11.5	Pal His	750 Jane 14.52	16 20 / 10/	Jan John	Los	trallententent	(35K 4-1	-	2	Sel # 00	ne Items/Reason	0			
Custody Transfer Re	, NO	ıtrix	W 4-20-88									\rightarrow \rig	,				Significant of the said	<b>1</b>	1421/88 1900			
	1 to SAMPLE IDENTIFICATI	Description fine	1105									<b> </b>				Special Instructions:	501 = Motory 601 = Motory	Received By	Fed Ex.			
Received By Date	Assigned to SA	\	08-516-Waai S		->	105/4-115-50			05-516-W.601			->					DL- Drum Liquids X- Other	Relinquished By	Bryong Straigh	0		86
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Transfer Re 1/Lab Work Request	E HL	5 2 1 -		Container/Preservative	Sel /	Soul	La Lit	F. LH	Garles	1/1/2	140	Opellen	6/11/2	0			7 /	7		/					# 57		Items/Reason				
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r Re	ant 1/2	Client Contact Phone 800 -		Date Collected	-20-88								>						$\backslash \backslash$								Time	2061 8			
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Custody			SAMPLE IDENTIFICATION	_	1105												/			ľ	$\setminus  $				ctions:	601 - Made	Received By	S			
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Sample No. 1289116  Sample No. 1289116  Soil Soil DS-D. D.  Received By Client USAF OF HL / TS Date	Phone 800 - 621 - 4528 Project Nu SAMPLE IDENTIFICATION	Client ID No. Description Matrix Date Collected Container/Preservative Actats	01-503-NOOI S.W. (1400 W 4-20-88 12 and 14CI		9(1) 19-503-1401 5 1.1 / 1/102		7	11 8 01-503-1/201 S. W / 1400 W. 42 / HC/ / J	(2) Balley lingle	4 14 paly 14.501	N 759 K		(M)								DS- Drum Solids Special Instructions: DL- Drum Liquids X- Other	Relinquished By Date Time Hems/Reason Dationalished By	FIL	2000 Long 1900 4				
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Matrix Date Collected Container/Preservative Pat. Purse. A11k. Commit TDS TOC No. My Patro Time 6.10. Keumen 1 Date ANALYSES REQUESTED Project Number 0628 19-02 Received By Date Due 4-27-85 RFW Contact Custody Transfer Re 1/Lab Work Request Relinquished By 7057 14.50 250 mlember 14204 14.501 Phone 800-821-4528 500ml July 181501 4-20-88 BHOWN YOAS/HC 300 ml puly 146504 350 mlenly 142504 150 mlamber 142554 240 JOH /4CI 12 40 1 VOA 5 Items/Reason Client Contact 645 Time 4/2/64 Date SAMPLE IDENTIFICATION Surface Woter (S.W)/1200 Received By Description from 400 Special Instructions: 1400 400 Received By Assigned to 50 Relinquished By 01-507- Hoor 01-503.2401 10171-205-10 01-505-1/201 DS- Drum Solids DL- Drum Liquids X- Other Client ID No. 916881 Items/Reason Sample No. S- Soil W- Water O- Oil 289 .. ≥ Matrix:

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Custody Transfer Re 1/Lab Work Request
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Phone 800 - 82

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RFW Contact J. D. Olander Date Due April 27, 1988 (Holding Time) Project Number 0628-14-02

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Custody Transfer Rec. J/Lab Work Requestived By  Client Contact 643 Logo Bate Date Date Due Phone 1-800-821-4528  SAMPLE IDENTIFICATION	Matrix Date Collected Container/Preservative Pura A 1, Comm	4-20-88 15 40m/ YOK /HC1 V.	The people (cold	542. [1630 12 40m/1045/HSO4	The solf full V. V. V	350mland	5.44 (1615 (22)40, 1048/HC1	1/ 1 / / / / / / / / / / / / / / / / /	*-	5.42. 1630	5.W. 1730 (2)40m(1/045/HC)	11 poly 1400 / V )	**************************************	3:10 (1630	Language of the second of the		V 450 July 11/18	Special Instructions: Special Methods 10
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	RFW Contact J. Olander Date Due 4/27/88 (Holding Time) Project Number 0628 - 14-00	ANALYSES REQUESTED	4/K. TO < MRZ.					·×		×											Ä		neceived by Date Time	More Lead yayta Ilia
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fer Rec 1/Lab Work Request	Client USAF OF HY Client Contact Quandos	- H	Dale Collected   Container/Preservative	4/21/88 10 Pate. 16.Col	(2) 850m/dusu/C	11 Plate Jal	124 Comber for	1 PPartilo	12 g Colombec Jack	1 (2) 4901 vox/40			1	1	2						43 00555 KT	Time		1830
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RFW Contact C.W. Krumm Date Due 7-27-55 (Ally tw) Project Number 2628-14-02	Pb H9 Se BWA Cad WHA							Received By Date Time	Wheth &	
-ab work Hequest  HL/75 RFW Contact C.w. 1  Lo Date Due 7-27-58  Project Number 262	Metal As							Relinquished By		
AF 0E act 6u	d Container/Preservative	1) 950 leaks (4)	12) How lamby li	isk by			538.2	llems/Reason		
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Peceived By Date Assigned toSAN	Client ID No. 51-54-Waar 5.	05-515-Waa1 S.W.	7				Drum Solids Special Other	Relinquished By	Pryory Frais	
NOTIFICO TRANSPORTED IN SECURITION OF THE PROPERTY OF THE PROP	Sample No. 128937	128938					Matrix: S- Soil DS- D W- Water DL- D O- Oil X- O	Items/Reason	lunten	

Pace of 2 700 RFW Contact J. D. Olander
Date Due April 27, 1788 (Holding Time) Time Container/Preservative Rich Augus Alkal Comm 7DS COD NH3 Date X Project Number 062'8-14-02 **ANALYSES REQUESTED** Received By X X Custody Transfer Re. 1/Lab Work Request Relinquished By H X Client Contact / Hugus Lus Lo Phone 800 -82/- 4528 liter poly/ 12504 2140m/ VOH/ 14CI 257) ml combor / H-5 250ml amber / 112504 Wall Ving ratil 6)40m2 VOTA/HC1 like poly 1000 liter poly/cool 2140me voit/HCI Ilems/Reason Federal Expressed 4/2/88 1900 Matrix Date Collected Time Sra # 0005948 Surface with /1155 W 4-20-88 83-02-4 88-02-4 Date 3 SAMPLE IDENTIFICATION 3 Jurtuse water/1340 Received By 25-518-W301 Surface with TB/1340 Special Instructions: Description Assigned to\_ Received By Relinquished By 128939 DE-517-WOOL 55-518-Wool Client ID No. DL- Drum Liquids X- Other DS- Drum Solids flems/Reason Sample No. 4688 Cooles Water Oil Soil Matrix:

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Par 1 of 2 Brw Contact J. D. Olander Line) Date Due Harif 27, 1988 (Holding Time) Description Time Matrix Date Collected Container/Preservative Arona Hulbart Hydro Scorn Sells BNA NOW, TOC Project Number 0625 14-01 **ANALYSES REQUESTED** Received By X Custody Transfer Rec. J/Lab Work Request 哉 Relinquished By 500ml anbor / Total 14.50 -4528 11: Herpoly /HNO3 4-20-88 2740ml VOA/IKI 950 ml amber/14504 500ml poly / 11-50 950 mlomber / 11,504 502nd amber/14504 3)950 ml ambr/1001 2) 40m 40A/ HC (2) 950 ml combor / cool Hiter puly / HNO3 psyl hod mogg Client Contact Augustus Phone 800 -821 - 452 Items/Reason Seal #0005950 Time . Federal Express 42188 1900 4-20-88 Date Ch-520-wed Stromagnettely 1645 ( 3 SAMPLE IDENTIFICATION Received By Surface wate 1620 1620 Surface water Special Instructions: Service with D Received By Assigned to Relinquished By 13 Doc-519-wool Client ID No. DS- Drum Solids DL- Drum Liquids X- Other Items/Reason Sample No. codler Soil Water Oil **Matrix:** 

Date

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		3y Client USAFOEHU/TS RFW Contact	Client 445	AFUEHU/TS	OFK REQUEST	30.		•
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MIDE	RFW Contact J. Okander Date Due Horila 7, 1988 (1 Project Number 0628-14-03	AN	Alkel Comm		X			X			XX			×	-		X							ed By			1
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// ab Wo	Client USHF OF H-1 TS RFW Contact Contact Augustus LO Date Due HPhone 800-821-4528 Project Num		Container/Preservative	2)40ml (DA-/HCI	liter poly/cool	950mlomber/H2SD	1) 40 ml YOX / 14C1	1 plate /cold	Som lando Hes	3) 4 Om I Ved /HCI	Infetic Jalet	520 1 Unher 11/501	) 40-1YON/HCI	L pletic feeld	950 mldaher 1480.	6)40ml vot/Hcl	1 Helichall	1804 Ocher 1169	(2) 60m / VOA /1+Cl		A A A		4265000	llems/Reason			
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Custody Transfer Rei 1/1 ah Work Bonnoot
Received By Client USMFO6HL   75
Assigned to Phone 800 - 8 21 - 45.38
SAMPLE IDENTIFICATION
Client ID No. Description / Line Matrix Date Collected Container/Preservative Pury. + Alk of Criming The Detro Pury
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<b>→</b>
101-542-WOOI Surface water 1520 W 4-20-88 C) 40 ml VOAT/HCI X
Litter poly (cool X X X
1000 1. 0001-323-W001 Jurtuce witer/405 W 4-20-88 2140 M VOA/ HC1 X
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X 12 00 12 01-524-10001 200-400 1426 12 4-20-88 2140ml VOH 14C1" X
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101-603-W001 Justace water/1130 W. 4-20-88
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X
X (2)950 in amber / cool
trix:
s. Soil DS. Drum Solids Special Instructions: Special Instructions

RFW 21-21-001/A-3/86

Date

Relinquished By

Items/Reason

Time

Date

Received By

Relinquished By

Items/Reason

BFW Contagt JO Olander Date Due April 29, 1988 (Holding Time) Page 170f 2 Tring Matrix Date Collected Container/Preservative Purge Pat Alkal Comm TDS COD NH3 TOC Time Date Project Number 06 28 - 14-02 **ANALYSES REQUESTED** Received By Custody Transfer Rec 1/Lab Work Request Relinquished By X Client Contact / Tugus Lo Phone 800 -821 - 4528 250 mlamber/112 05-233-m001 Groundwater/ 1350 W 4-22-88 240 W 1004/HCI 360 mlamber/1650 4-22-88 (2) 40 ml 10 #/14cl 12 poly//4280. 2)40 ml vo#/1K1 liter poly/cool COO Items/Reason Hiter Poly like poh Special Instructions: Secle # 2004623 Express 42468 1900 25-132-maps Grewndwater/1140 W 4-22-88 Date SAMPLE IDENTIFICATION 05-133-M301 Groundwehr TE/1140 (U) Received By Description / Lederal Received By Assigned to. O culler Relinquished By Client ID No. DS- Drum Solids DL- Drum Liquids X- Other Items/Reason Sample No. 129019 cooker 29018 12901 Water Matrix:

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Date\_

Assigned to \_

Custody Transfer Re 1/Lab Work Request

Client Contact Augustus 60 Phone 800-821-4528

Date Due Hpril 39,1988 (1) Project Number Ob 2814 -02 **ANALYSES REQUESTED** 

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Request RFW Contact TD Olander Date Due Horil 30, 1998 Project Number 0628-14-0	ANALYSES REQUESTED										/				Bereined B.	706	ALL WARE JANS		
Client USHFOE #L/ TS RFW Contacts Client Contact Augustus Lo Phone 800-831-4538 Project Number	101 110		1 1/1							/					Relinguished By				
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Request  RFW Contact Tolander  Date Due 4/30/88  Project Number 0628-14-02	ANALYSES REQUESTED														We Ceived by Date Time	- June		
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J/Lab Work Request **Custody Transfer Rec** Received By

Client Contact (Lusustos) Phone Sud-821 4528 Client USA

Assigned to \_\_

Date\_\_

Date Due 4/30/88 Project Number 26.28 RFW Contact

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DL- Drum Liquids X- Other W- Water 0- Oil

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RFW 21-21-001/A-3/86

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Assigned to\_

Date\_\_\_

Request	RFW Contact JD Olek	Date Due 5/17/68	Project Number 2628-
fer Recadellab Work Request	Client 115# + UEHL 175	Client Contact 645 Lo	Phone 500 - 521 - 4578
Custody Transfer Reverted			

Date Due 5/17/66 Project Number 26.28-14-02

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DL- Drum Liquids
X- Other RFW 21-21-001/A-3/86 Items/Reason

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Assigned to\_

Custody Transfer Rec. d/Lab Work Request

Client Contact\_ Phone 500-821-

Date Due 6/12/88

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ransfer Recad/Lab Work Request	Client US#F06#L / 7S	Phone 800 -821 - 4528		Container/Preservative Pe	21 40 m/ wats/HCI		11. hr poly / 14.50 x	250mlamber/11504	500ml pely/14.50,	111hor poly / 141022	950 ml ambor / 12504	Izgal amber (Cos)		Hiterpoly Icool	11th poly 112504	250 m Comber/H204	500me poly / 11,504	Hiter poly/HMB3	950 pet amber / 125UV	Real amber 1001	-	00	-1101-5	)	
ansfer Rec	Client (Contract)	Phone 800		Matrix Date Collected	88-01-9							>	88-01-5							>			9		
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	Received By Date		Client Cont	AFOFHL-1	S RFW Cont	ac DOland	ler HI	( )
	ssigned	toSAMPLE IDENTIFICATION	Phone 800-	00-8-7-453	4	Project Number 6628-14-02	120-H	
Sample No.	Client ID No.	Description Matrix	Irix Date Collected	Container/Preservative	CONME	mated 175/11 (13/C) FATE	٥	5
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Date Due 5-17-85 (Holding Trunk) Project Number 0825-14-02 BNA TOC MELIST **ANALYSES REQUESTED** RFW Contact DOlander Puty Halo Alk TOS COD Puty Handonmenia NHS Custody Transfer Revid/Lab Work Request og X 07 Matrix | Date Collected | Container/Preservative 14.504 250 ml amber/H504 500ml poly/14504 Bomlamber/H54 250mlamber/1450 liter poly / HADB3 950 mlamber/11550 500ml poly/1/504 (2) 40 ml vials / HC) Yead amber/coo libre poly 114,504 Ggalamber/col Lliber poly (HNU3 2140mlvials/HC 1 liter poly/pool Client Contact Hysustus L liberpaly/co liber poly 5-10-88 88-01-5 5-10-88 SAMPLE IDENTIFICATION 3 3 3 25-517-wodz Surface water /1805 30205 D5-518-42002 Surface wher / 2145 05-517-was Surface word/1805 Description Received By Assigned to. 30205 Jos-518-wodz Client ID No. 3020Y 30204 Sample No.

Special instructions:

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#0004613	Date Time	1	005/132/11/2				
Special instructions: Seal 1	Received By	7 - 1	Perral Express	•			
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1b Work Request  1c - 15  1rs Lo Date Due May 1  1 4528 Project Number De	ANALYSES REQUES TO NO. 2	Ag payenhulay
Custody Transfer Records (d/Lab Work Request Client USHFOKHC-175 RFW Contact Client Contact Higgstras Lo Date Due Client Contact Higgstras Lo Date Due Le Phone 800-821-4538 Project Numitation	Matrix Date Collected Container/Preservative  E W 5-10-86 2140m wile   HC    250m amber   HC    W 5-10-86 2140m wile   HC    E W 5-10-86 2140m wile    W 5-10-86 21	0251 8411/5 AM
Received By Date Assigned to	Sample No. Citent ID No. Description M. 2020 66-519-w002 Sw-face wuter/2/15 L. 2020 0.002 Sw-face wuter/2/15 L. Special Instructions: Special Instructions: Soil Soil Soil Soil Soil Soil Soil Soil	Ch. Folgral
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Date\_

Assigned to.

Custody Transfer Re. d/Lab Work Request

RFW Contact JP Okader

Date Due 5/12/88

Phone 800-821-458

Client Contact 645

**ANALYSES REQUESTED** Project Number 16 28-16-02 149 4 motals de 700 1656 Malrix Date Collected | Container/Preservative 260 mlowly He SOL 14.50 Soul 1/4/ 1/504 HNOZ 14 MA/ HNO3 3 am lend 95 Dulant 250mlen Find and 14COS 2/10/88 SAMPLE IDENTIFICATION Special Instructions: Description 1510 1700 510 SE SW 20-501- WOOZ 07-523-4000 DS- Drum Solids
DL- Drum Liquids
X- Other 01-502-WOOL Client ID No. Sample No. Soil Water Oil Matrix:

Sea/# 00053/43

Time Date Received By Relinquished By Items/Reason Time 5/4/25 1500 Date Received By S.W - Luxpes Water Relinquished By Items/Reason

Sample No. Cillent (2017) (201	Received By Client Contact Gusta Project Number 26 28 - 14-26  SAMPLE IDENTIFICATION  Custod Lab Work Request Revised Laborated  Client ID No. Description Matrix Date Collected Container/Preservative Pat Physical Action of Standard Male Acount Action of Male Action of Male Act	29 01-501-wood S.W/ 1700  Who whith the wife with the way the wood of the wood		ا د ه	
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e 5/17/88  Number 2628-11-02  ANALYSES REQUESTED		707		×	>					\ \ \									Received By	Medical St	
K Request  RFW Contact JD 01a  Date DueE/12/BK  Project Number0678  ANALYSES RE	at Pars AIKTER	Sain. No.						/ /	>						>	Xex			Relinquished By		
Custody Iransfer Rec. 'd/Lab Work Request Client USAF DEHL 175 RFW Contact Client Contact Gus & Date Due Application	Container/Preservative	Blom (VOK / HCI	120 Strate	12 Sand 1000	9	16 plut (HAVOZ		3	Lylot / wl	The Sall of	250m/14.506	1444 HINGS	500 plat 14.504	1) 40 (VOA) (H)	12 styliall	950mlaml/Hisak	111155	1294000	Items/Reason		
Client USAF OF HE Client USAF OF HE Client Contact Gus Phone See-521-4	x Date Collected	83/1/3					A	5/10/88						5/10/88			4 VCO	160	Date Time	ज्याहर १इक	
Byto	Description . Matrix	J615 W					<b>A</b>	1615 W	+					1515 W		7	Charlat Instructions:	= Juster water	Received By	ENA	
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Custody Transfer Re d/Lab Work Request Client USAF /OF HL Received By

Client Contact 645 Phone 802

Assigned to \_

Date\_

RFW Contact

ANALYSES REQUESTED Project Number 0628-14-02 Date Due COM

SAMPLE IDENTIFICATION

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	Sample No.	818	6130	\$30	1881	833	823	2824	2835	2836	827	2828	2839	28.30	5831	1830	832	36832	58.33	6833	2834

Matrix:

DS- Drum Solids DL- Drum Liquids X- Other S. Soil W. Water O. Oil

Special Instructions:

Time Date Received By **Relinquished By** Hems/Reason 8448 1900 Time Date Received By Relinquished By Items/Reason

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Sample No.	Client ID No.	Description ( )	Matrix	Date Collected	d Container/Preservative		- FOM	ANALTSES REQUESTED			
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136837-18481 **ANALYSES REQUESTED** ance Project Number 8628 - 14-02 RFW Contact 5 Olenda Date Due -8/12/88 Maylor TDS Custody Transfer Re rd/Lab Work Request 9 Matrix | Date Collected | Container/Preservative 42504 4,504 46504 14.506 4.506 42.504 non Client USAF /OEHI Client Contact 645 Phone **900** 8/2/88 SAMPLE IDENTIFICATION 3 3 3 Description for 25. 3561 1955 1830 1900 Received By Assigned to. S.W 25.00-023-20 26-519-WOL 25-517-WOR 15.58-4022 07-511-4002 27-521-4001 7-521-4022 07-572-WOA7 Client ID No. Sample No.

1 Lamber for Petroleum Hyrocarbons KAM 8/5/88 was broken upon receipt, Special Instructions: Sample 06-519-WOJZ DS- Drum Solids DL- Drum Liquids X- Other Soil Water Oil Matrix:

odie Birgern 85/8 100 Received By Relinquished By items/Reason 1300 Time 84/18 Date Received By Relinquished By Items/Reason

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8-12-88	Project Number 0628 - 14-02	ANALYSES REQUESTED									t s		1	(32)				ı	,		! <b>!</b>	\	- m521 (ms)	Meal MSD
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## Custody Transfer Record/Lab Work Request

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**ANALYSES REQUESTED** Project Number 2628-14-02 RFW Contact J Okushy TDS Pater Date Due 2-15/88 COD America NO 14524 14504 14504 Matrix | Date Collected | Container/Preservative Client USAF WEHL Client Contact 642 000 4757 SOGE 500 8-7-8 8-6-88 83-88 "Phone\_ 8-9-8 SAMPLE IDENTIFICATION 3 Special Instructions: Sed 1500 500 1415 1425 1350 1430 1430 140 210 Description losto Received By Assigned to\_ 01-259-MOC 1204-851-10 37204 13-117-400L DS-118-MOOL 37206 05.116 Mag. 03-116-M101 24-148-MODI X-150-HON X-251-1001 04-113-HOQ D 6-517-4022 03-116-M201 03-116-M501 0K-129-11001 15-116-1160 18-126-MOOL 128-126 MAZI Client ID No. DS- Drum Solids DL- Drum Liquids X- Other 37202 37303 37205 37207 37208 7209 37210 Sample No. 37213 37215 3721 )ICL 5721 Soil Water Oil Matrix:

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fer Record/Lab Wolfent SAFOEHLA	Container/Preservative    Local Luman  Same   HeSQL	Items/Reason
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Received By Client Light Follows  Bate Assigned to Sample IDENTIFICATION  Client ID No. Description for Matrix Date Collected Container/P Phone  Description of the Collected Phone  Description of the Collected
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Time Date のアス **ANALYSES REQUESTED** 16 3 Olembs Received By Date Due 8-15-58 Project Number RFW Contact\_ Custody Transfer Record/Lab Work Request TDS 1002 Relinquished By Container/Preservative 11. poly/ Nove Items/Reason Client Contact 645 A 98/14000 Client USA Naviol: 8418 09:40 Date Collected Time 8-8-8 Phone\_ Date Matrix SAMPLE IDENTIFICATION E 550 Received By 1205 1200 355 1150 215 11/2 Special Instructions: Description Scelette Received By Assigned to Relinquished By 37309 ROSE WORLD 25-5A- WOLL 5-518-Wez 5 -518-W/B 10n C15-51 25-58-W121 02-918-1482 125/10/5-10 21-50-402 01-50-10151 01-504-WZZ 01-50 P-W521 o. Fotwood 01-502-4DZ DI-505-4021 1001-03-XX 15-516-WIL DS- Drum Solids DL- Drum Liquids X- Other Client ID No. 2000 AN 198 As Change with 137305 37303 37296 137293 37295 37298 137302 Items/Reason 37294 37299 37297 37304 37307 Sample No. 37308 37306 37300 137301 Soil Water Oil

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	ATION	Matrix	3															
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Received By Date	Assigned to SA	Cilent ID No.	04-111-40	101-M-111-40	64-111-M201	04-111-MSM	04-111-40	04-112-MON	04-115-MOOI	04-152-MON	04-253-May	24-154-NOO!	04-255-MODI	of 249 May	07-241-AO	27-241-rioz	27-241-AQZ1	01-241-MIZI
W. Sur		Sample No.	137219	137220	157221	127333	137333	157224	137925	157936	137937	157228	157939	137930	157231	15/1332/	157233 N	157355

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**ANALYSES REQUESTED** 

TDS 1940

Project Number 2628-11-02

RFW Contact J Date Due 12-

103 Time Herby 4/6 Date Received By Relinquished By Items/Reason 00004260 2000 Time 88 Date Special Instructions: Sea **Received By** Relinquished By DS- Drum Solids DL- Drum Liquids X- Other RFW 21-21-001/A-3/86 Items/Reason Challe Soil Water Oil ċ

27-141-422 77-241-581

7236 pra4-621

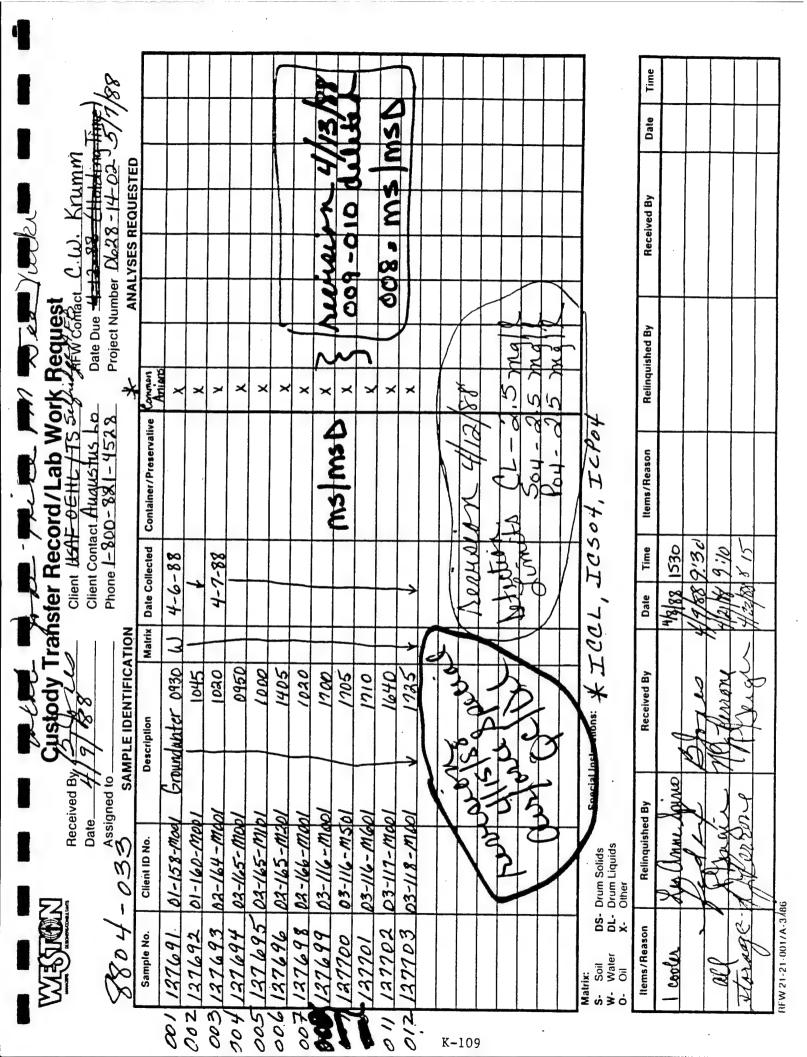
Matrix:

RFW Contact Jon Olander Limited Halking Time 6/27/08 Time original for 8806-750 Project Number 0628-14'-02 **ANALYSES REQUESTED** Received By Matrix Date Collected Container/Preservative Gmm CI /F - MDV X X X X X X X Justody Transfer Record/Lab Work Request X Relinquished By X X X Y X X X Phone [-800 - 821-4528 6-20-88 11:10 poly (co) 1000 Items/Reason liter poly # 0004875 +840000× Time 88-16-9 0011 188/12/00 Date Grandwater/ 1215 W 01-136-most Grand water/1920 W SAMPLE IDENTIFICATION Sects And Chores 080 1130 0800 1130 1130 1626 1300 0915 1600 Received By 4 0/2/ 1315 138 9291 1610 Special Instructions: Description Assigned to Relinquished By 77-237-m62 25-233-MD21 28-128-mgal 07-243-M621 150m-E01-FD 07-243-ma21 07-243-m5b1 15-103-MIL 15-167-Mabl 07-140-m1 p1 25-231-moa 17-143-mox1 07-140- mobil Date\_ 25-107-modil 25-132- mob 15-167-mod DS- Drum Solids
DL- Drum Liquids
X- Other Client ID No. Ilems/Reason cooler Sample No. Waler Soil ō Matrix: Ś

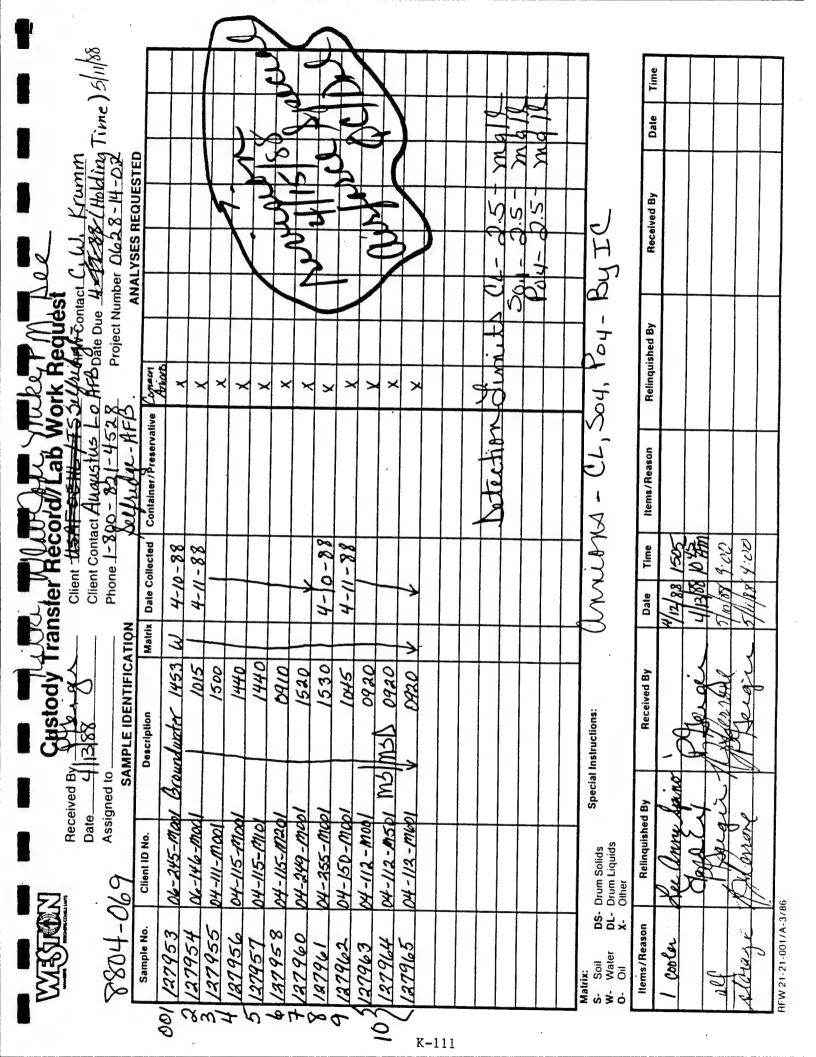
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NO THE STATE OF TH	8804	Sample No.							159	137652								Matrix: S- Soil DS- W- Water DL- IO- Oil X- O	llems/Reason		V		RFW 21-21-001/A-3/86
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NW STAN		ved By	Stody Transf	Sient Contact	Te sa	Work Request  HEB RFW Contact C.W. Krumn	O.W. Krum S-6-88	)	
8804-009		Assigned to SAMPLE IDENTIFICATION	FICATIO		31-16	TOUR PROJECT NUMBEROY	ALYSES REQUESTED	-0 <i>9</i>	
Sample No.	Client ID No.	Description	Matrix	ix Date Collected	Container/Preservative	-			
100	549481	01-133-111001	W	88-9-h		-			
8	137646	01-123-17001	-						
W	127647	100m-461-18	/						
H	127648	7-7	/						
3	127649	01-156-mai	2/						
q	127650	01-162-000	_						
7	127651	101-123-11101							
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Time Date **ANALYSES REQUESTED** 2 Project Number 0628-14-02 + 00 Received By 003 700 Relinquished By Newwo S Phone 1-800 - 321 -4538 CL, 504, 404 otropos Matrix | Date Collected | Container/Preservative Items/Reason 1600 Time Jarra 1 4-9-88 4-8-88 Date SAMPLE IDENTIFICATION Groundwater 1600 1645 Groundanter 1440 1340 1645 440 340 1407 340 1645 0/9 Received By Description Received By Assigned to Relinquished By 10011-247-11001 127862 06-144-MID 1001-103-11001 04-154-mod1 10-110-1100 06-110-11160 04-253-110 04-251-1100 De-144-1920 Va-110-M50 06-44-100 Drum Liquids Other Client ID No. **Drum Solids** S. × F Items/Reason 127860 127863 127804 127859 Sample No. 127808 127809 127857 127861 Soil Water Oil Cooles Matrix: B 8



Time Dale **ANALYSES REQUESTED** Sustody Transfer Record/Lab Work Request HBDate Due April 19, 1988 (14 Project Number 0428-14-02 Received By 2L, 504, 104 Relinquished By Matrix Date Collected Container/Preservative Connon × × Phone 1-800-821- 4528 Client Contact Hugustius Hrris-Items/Reason 1415 Time 4-11-88 88/61/4 Date SAMPLE IDENTIFICATION Groundunter 1350 W 0840 0945 1420 1005 1510 Received By Special Instructions: Description Received By \_ Assigned to Relinquished By 01-257-17001 05-255-mdol 105-105-11001 01-259-11001 04-113-mos 01-361-Mod1 01-263-100 04-148-MON DS- Drum Solids DL- Drum Liquids X- Other Client ID No. 884-692 Items/Reason 128050 78052 123056 128053 128048 128049 28051 STATE OF Water Oil Soil

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(13/88				Time
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Equest Brw Contact C. W. Krumn Date Due And Ses Requested				Received By
eques	Anions	J Pro	L, Pox, Say.	Relinquished By
Lab Hugustus 821-	Container/Preservative	sjore. St	Arush-C	Items/Reason
Ustody Transfer Record Client 4291 Client Contact A Client Contact A Phone 1-800-	Matrix Date Collected  (J) 4-13-88  (L) 4-13-88	D= Lal		4/4/88 1340 4/15/88 9.20 5/0/8 9.00
E O	Ground water 0915 (		Special Instructions:	Heceived By
Received Date	Client ID No.  04-152-M0C1  05-134-M0D1		DS- Drum Solids Special DL- Drum Liquids X. Other	du luma Saino
WESTERN 8804-113.	188174 128175		Matrix: S- Soil DS- I W- Water DL- I O- Oil X-	all conten
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Request  Request  Rev Contact C.W. Krumm 5/2/88  Bride Due 4-25 12 may 4-25 18 (Hulding Time)  Project Number 14-28-14-02  ANALYSES REQUESTED  ANA
L. W. Krumm  1. C. W. Krumm  1
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1 0 2 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
888888888888888 K-114

Received By,

Date

Custody Transfer Record/Lab Work Request

Client Contact Hugustus Phone 1-800 - 82

RFW Contact C. W. Krumm 5 Date Due 4-29 88 (Holding Time Project Number 0628-14-63

	00	Assig /	Assigned to			Phone 1-8	Phone 1-800-821-4528	Project Numb	Project Number 0628-14-63	
	4008	8004-183	SAMI	SAMPLE IDENTIFICATION	ATIO	7		AN	ANALYSES REQUESTED	
	Sample No.	Cilent ID No.	De	Description	Matrix	x Date Collected	Container/Preservative	Common		
18	128926	1001-015-40	S.W.	S.W. 11730	3	4-20-88		X		
022	027 138927	1001-111-400d		1650				Х		
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025	025 128930	105/12-4201	/	1615				*		
036	036128932	04-513-4001	1	1800		7		χ		
160	027 128933	05-130-1901		Growducker 11330		4-21-88		X		
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	Matrix:	DS- Drum Solids	Special In	Special Instructions:			•			

DS- Drum SolidsDL- Drum LiquidsX- Other

Matrix:
S- Soil
W- Water
O- Oil

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
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/	Ded 1	" or go	43.368 9:33	9:33					
		,	/						

K-115

REW 21-21-0017A-3786

28																			Time				
5/2/																			Date				
RFW Contact C.W. Knumm 5/21/88	Imber Da38 - 14 - 03																		Received By				
Client USAF DEHT / TS RFW Contact.	Project Number	Convers	X	×	X	×	Х												Relinquished By				
F DEHL/TS	45,	Container/Preservative																	Items/Reason				
Client Contact Hudush	Phone 1-300	Date Collected	88-02-1			/	1												Date Time	0011 88/ar/h	356 9.3		
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	/83 Assign	Client ID No.	01-505-1000	07-521-4100	87-522-400	27-523-Wa	100m-4c2-10		٠								DS- Drum Solids DL- Drum Liquids	Other	Relinquished By	Lu Onm	Led L		
	- 4088	Sample No.	138921			7											Matrix: S- Soil DS- W- Water DL-	ō	Items/Reason	1 cooler			
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Received By Date Client ID No. Assigned to SAM Client ID No. De SAM Client ID No. De SAM Client ID No. De SAM Client ID No. De SAM SAR-MOOI ADMINISTRATION SOLIDS TO SPECIAL IN MAN. SOLIDS SPECIAL IN MAN. SPECIAL IN MA	Ster Clien Clien	Date Collected	4-22-88						<b>^</b>	4-23-88				<b>~</b>						*	$\vdash$	1/24/28 1615	一年 43	Struk 9.20	18	
Received Date Date Assigned Assigned -122-mol (72 -102-mol (72 -102-mol (72 -102-mol (72 -107-mol (72 -107 -107 -107 -107 -107 -107 -107 -107	Custody Tran		04/1/-	_ 7	1555	1430	655	1610	0891	0945	00//	1015	0415							structions:	Received By		Messin	1 the Expone	11/2000	
	ived By fined to SAM				1001	100	las	100	/00/	100	/ /00	/00	1001	1001							uished By	. Jains	187	291 J	18 Jane	
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	W.EM	Sample No.	129017	129019	129020	129022	(29023	129024	129025	129059	129060	129061	139063	129064						ater -	Items/Reason	tolla		M	Trage:	>

Time 600 Date Date Due 5 17 88 (Holding Time) # SLFRIDGE ANALYSES REQUESTED ASO OF Project Number 0/238-14-62 Custody Transfer Record/Lab Work Request Received By DC + Q Relinquished By Erz Common Container/Preservative Client Contact Augustus Lo Cevision -10.00 Olle 030 De le 18-d-Phone 1-200-821-4578 003,015 ilems/Reason 014 MS MS Theyare 0 18:30 9.00 Matrix Date Collected 1530 2238 5-10-88 Date 304 SAMPLE IDENTIFICATION Surface Water 11540 W ters 1230 1730 1730 1540 1955 1820 1835 1835 1805 1830 1630 1415 7635 Received By 1800 1735 Special Instructions: \* Description MS/mSD Received By Assigned to and Relinquished By 15-516-10602 01-503-6/02 15-516-61002 130186 OF 500 WAS 04-512-6002 05-515-6002 01-503-41102 01-505-41002 14-510-4102 16-57-1402 5-518-4002 06-519-61002 04-511-0002 54-513-WXX 15-514-1002 4-503-4P02 14-512-4002 04-512-61/02 DS- Drum Solids DL- Drum Liquids X- Other Client ID No. 1386 130192 130193 82 Items/Reason 130180 30195 30196 130187 30200 130183 30204 5088 30198 30199 130194 Sample No. 130181 JOAG 3020 355 Water 301 ō

Time Date **ANALYSES REQUESTED** Project Number 0628-14-02 Received By Relinquished By × Client Contact *August VIS Lo*Phone *I-800-821 - 4578* Items/Reason 9.30 Date Collected 1530 Time 5-10-88 188/ 28/12/5 Date Matrix SAMPLE IDENTIFICATION 2025 Surface Water /1845 2035 2055 1445 1540 0191 1510 1200 1615 515 **Received By** Special Instructions: Description **ASH-SH** Assigned to. Relinquished By 06-520-4002 01 501/1502 07-524-(1002 02-507-61002 12-509-41003 01-501-LVDZ 77-529-1702 02-508-61002 27-522-11002 N-502-4003 07-521-4002 DS- Drum Solids DL- Drum Liquids X- Other Client ID No. 885-386 30190 30208 30207 Items/Reason 30209 30178 184 30188 30179 30210 Sample No. 3019 Coole 3021 Soil Water Oil 1301 Matrix: 23 K-119

Date Due 5-19-818 ( Holding RFW Contact C. W. Krumm

Received By August Olient 115AE AEU Vork Request

Date S

	Z	St. Whaly	eligati Welym, Re Pm. Bertan	. \
WESTON Analytics Use Only Custo	\$	Record/Lab	Work Request	W. STUDY
194-9088	Refrigerator# #/Type Container	4 11 SAID		WESTON Analytics Use Only
13/46 EO-11-30019	Containers/Volume			Safriple) Were: 1 Shipped or Hand- Beirdfred
-Date Due	ANALYSES PREQUESTED	15 B		NOTES: 2 Ambient of Chilled
WA Use Only Client ID/Description	Matrix Date			NOTES:
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TO O ON AND AT		No May	000	
*				COC Tape Was:
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Metrix: W-Water DS-Drum Solids Special Instructions S-Soli O-'Oil DL-Drum Liquids SE-Sediment A-Air F-Fish SO-Solid X-Other	$\mathcal{O}_{\mathcal{O}}$	Jucapecial G	Chel	4 Unbroken of Sample NOTES: Y N
Item/Reason Relinquished by Received by	Date , Time Item/F	Item/Reason Relinquished by	y Received by Date Time	COC Record Was:
winase the hound the give	7768 945-			Discrepancies Between Sample Labels and 200
				Record? Y NOTES:
RFW 21-21-001/A-5/88	1			7-115

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W. Such	WESTON Analytics Use Only Sapetes Were: 'Shipped or Hand- Delivered NOTES: 2 Ambient or Chilled NOTES: 3 Received Broken' Leaking (Improperly Sealed) Y NOTES: NOTES: AFODBARY Preserved Y NOTES: POTES: AFODBARY PRESERVED Y NOTES: AFODBARY PRESERVED Y NOTES: AFODBARY PRESERVED Y NOTES: AFODBARY PRESERVED Y NOTES: 1 Present or Owler Package Y 2 Unbroken N 2 Unbroken N 3 Present or Cannot N 3 Present or Cannot N 3 Present or Cannot N 3 Present or Cannot N 3 Present or Cannot N 3 Present or Cannot N 3 Present or Cannot N 3 Present or Cannot N 3 Present or Cannot N 4 Package N 4 Package N 5 Package N 6 Package N 7 N 8 N 8 N 8 N 8 N 8 N 8 N 8 N 8 N 8 N 8	4 Unbroken of Emple NOTES: Y N	COC Record Was:  1 Present Upont Receipt of Samples Y N Discrepancies Between Sample Labels and COO Record? Y N NOTES:
Michel Work Request Pransfer Record/Lab Work Request	Refrigerator#  #Type Container Plastic— Containers/volume HT HT HT Preservative  ANALYSES  ANALY	": auforceforcial al/bel	Item/Reason Relinguished by Received by Date Time  Received by Date Time  Received by Date Time
WESTON Analytics Use Only	ale Due AFB  ID/Description  I	W - Water O - Oil tent A - Air	Item/Reason Relinguished by Received by Date

RFW 21-21-001/A-5/88

	WESTON Analytics Use Only	Samples Were:	Delivered	2 Ambient or Chilled	3 Received Broken/	Leaking (Improperly Sealed)	Y NOTES:		Y N N	NOIRS:	5 Received Within	Z .	NOTES.	COC Tape Was:		3 Present on the Ample	4 Unbroken ke Ample NOTES: Y N	COC Record Was: 1 Present Upont Receipt	of Samples Y N	Discrepancies Between Sample Labels and COC	Record? Y (N NOTES:
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ec.	Refrigerator#	e Contai	Preservative	ANALYSES REQUESTED	ది ర	40	9		_		-						7	3 mg	∏^	1,000	
(2)	Refri	Cont.	Prese	AP BE	Matrix	3			_						·	$\exists$	ctions:	Date	6/4/9	13/15	
WESTON Analytics Use Only Custon	Je #59	Jalying MFB	80-61 -8C00 83 CC0	VPhone		08-126-M031					C. O. O. Milly Hax	To accomedate	deflerent Sites				W - Water DS - Drum Solids Special Instruction O - Oil DL - Drum Liquids A - Air F - Fish X - Other	Relinquished by Received by	K. Shedhar Whyledon 71	2 Millian C Maragin 19	
WESTON	XX XX	Cilent	Work Order	RFW Contact Client Contact/Phone	WA Use Only Leb ID	88 30									-		S - Soil SE - Sediment SO - Soild	Item/Reason	0,30	atoras	

RFW 21-21-001/A-5/88



# APPENDIX L DATA VALIDATION TABLES

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FIELD NUMBER	RFW NUMBER		E DATE			ANALYTES (mg/kg)	VALIDITY
BATCH: 12019			12/17/87		ACETONE	TOLUENE	ALL VALID EXCEPT AS LISTED
05-402-8301	120193	TB	12/22/87	0.014		<.002	ALL THEIR ENGELT NO ELOTED
999MB1	LQC120193	S MB	12/22/87		<.006		
999MB1	LQC120194	MB	12/22/87		<.006		
				0.07	0.03	0.01	VALID VALUES
05-401-B001			12/22/87		0.012		NOT VALID
05-401-B001		SP	12/22/87		0.017		NOT VALID
05-401-B001	120194	SP DU	P12/22/87	0.007	0.013		NOT VALID
05-401-B002	120195	I	12/22/87	0.01	0.014		NOT VALID
05-401-B003	120196	1	12/22/87	<.005	0.022		NOT VALID
05-402-B001	120197	I	12/22/87	<.006	0.015		NOT VALID
05-401-8002 05-401-8003 05-402-8001 05-402-8002	120198	1	12/22/87	<.005	0.024		NOT VALID
•••••				••••••			***************************************
BATCH: 120305	5-1230317		12/17/87	MTHCHLOR	ACETONE	TCA111	ALL VALID EXCEPT AS LISTED
05-404-B301	120317	TB	12/31/87	0.012		0.01	
999MB1	LQC120305	MB	12/29/87		<.005		
999MB1	LQC120309	MB	12/30/87		<.006		
999MB1	LQC120312	MB	12/31/87		<.006		
				0.06	0.16	0.05	VALID VALUES
05-402-B003	120305	1	12/29/87	0.015	0.012		NOT VALID
05-403-B001	120306	I	12/29/87	0.006	<.010		NOT VALID
05-403-в002	120307	I	12/30/87	0.009	0.029	<.003	NOT VALID
05-403-B003	120308	I	12/30/87	0.015	0.034	<.004	NOT VALID
	120309	I	12/31/87	0.007	0.039		NOT VALID
05-404-B001	120309	•					
05-404-B002	120310	ī	12/31/87	0.007	0.057		1 7 7
05-404-8002 05-404-8003	120310 120311	-	12/31/87 12/31/87	0.007 0.007	0.057 0.032	0.007	NOT VALID
05-404-8002 05-404-8003 05-405-8001	120310 120311 120313	I	12/31/87 12/31/87			0.007 0.049	NOT VALID
05-404-8002 05-404-8003 05-405-8001 05-405-8002	120310 120311 120313 120314	I I	12/31/87	0.007			NOT VALID NOT VALID NOT VALID
05-404-8002 05-404-8003 05-405-8001 05-405-8002 05-405-8003	120310 120311 120313 120314 120315	I I	12/31/87 12/31/87	0.007 0.01	0.032	0.049	NOT VALID NOT VALID NOT VALID NOT VALID
05-404-8002 05-404-8003 05-405-8001 05-405-8002	120310 120311 120313 120314	I I I	12/31/87 12/31/87 12/31/87	0.007 0.01 0.006	0.032	0.049 0.038	NOT VALID NOT VALID NOT VALID

MTHCHLOR - METHYLENE CHLORIDE

MEK - 2-BUTANONE

MIBK - 4-METHYL-2-PENTANONE

MB - METHOD BLANK

TB - TRIP BLANK

DUP - DUPLICATE

SP - SPIKE

SP DUP - SPIKE DUPLICATE

	RFW NUMBER					ANALYTES (mg/kg)	VALIDITY
						ANALYTES (mg/kg)	
ATCH: 120350					ACETONE		ALL VALID EXCEPT AS LISTE
14-410-B301				0.005			
	LQC120350						
99MB1	LQC120361	MB	1/4/88	<.001	<.002		
				0.025	0.01		VALID VALUES
4-406-8001	120350	I	1/2/88	<.005			NOT VALID
4-406-8002 4-406-8003	120351	I	1/2/88	<.005	<.004		NOT VALID -
4-406-8003	120352	I	1/2/88	<.005 <.003	<.004		NOT VALID
4-407-B001	120353	I	1/2/88	<.004	0.015		NOT VALID
4-407-B002	120354	I	1/2/88	<.005	<.008		NOT VALID
4-407-B003	120355		1/2/88	0.013			NOT VALID
4-408-B001	120356	I	1/2/88	0.009	0.003		NOT VALID
4-408-B101	120357	DUP	1/2/88	0.009	<.007		NOT VALID
4-408-B101	120357		1/2/88	0.007	<.004		NOT VALID
4-408-B101	120357 120358			<.004	<.004		NOT VALID
4-408-8002	120358	I	1/2/88		<.010		NOT VALID
4-408-B003	120434		1/2/88	0.019			NOT VALID
4-409-8001	120359	ī	1/2/88		<.005		NOT VALID
4-409-B002	120360	ī	1/2/88		<.011		NOT VALID
4-409-B002	120361	Ī	1/4/88	0.008			NOT VALID
4-410-B001	120362		1/4/88	0.011			NOT VALID
4-410-B002	120363		1/2/88	0.011 <.002	<.008		NOT VALID
04-410-8102	120364	DUP	1/2/88	<.002	<.007		NOT VALID
04-410-8102 04-410-8003	120365	DUP	1/2/88	0.012	<.003		NOT VALID
ATCH: 120434	4-120443		12/22/87	MTHCHLOR	ACETONE		ALL VALID EXCEPT AS LISTE
04-412-B303	120443	TB	1/4/88	0.008	<.005		
	LQC120440					0.005	
999MB1	LQC120443	MB	1/4/88			<.0046	
				0.04	0.025	0.025	VALID VALUES
04-408-B003	120434	I	1/4/88	0.019 0.039	0.013	<.004	NOT VALID
4-409-B003	120434 120435		1/4/88	0.039	<.009	<.004	NOT VALID
4-411-B001	120436	1	1/4/88	0.009			NOT VALID
4-411-B001	120437	I	1/4/88	<.004	<.010	0.006	NOT VALID
4-411-B002	120438	1	1/4/88 1/4/88	0.018		0.008	NOT VALID
4-411-B003	120439	I	1/4/88	<.003		0.007	NOT VALID
4-411-B003	120439	SP	1/4/88	<.003 <.003	<.005	0.007	NOT VALID
04-411-B003	120439	SP DU	P1/4/88	<.003	<.006	0.012	NOT VALID
						0.009	NOT VALID
04-412-8002	120440 120441	I	1/4/88	<.003		0.014	NOT VALID
04-412-B003	120442	,	1 // /00			0.016	NOT VALID

MTHCHLOR - METHYLENE CHLORIDE

MEK - 2-BUTANONE

MIBK - 4-METHYL-2-PENTANONE

MB - METHOD BLANK

TB - TRIP BLANK

DUP - DUPLICATE

SP - SPIKE

SP-DUP - SPIKE DUPLICATE

FIELD NUMBER	RFW NUMBER	SAMPL! TYPE	E Date			ANALYTES (mg/kg)	VALIDITY
BATCH: 121082	124007		4 /5 /00				
000und	- 121093		1/5/88	MINCHLOR	ACETONE		ALL VALID EXCEPT AS LISTED
999MB1 999MB1	100121002	MB	1///88				
AAAWR I	LUL 12 1005	MB	1/8/88		<.008		
04-413-8001	424002			0.01 0.009	0.04		VALID VALUES
04-413-8001 04-413-8001	121082	1	1/8/88	0.009			NOT VALID
04-413-8001	121082	SP	1/8/88	0.006			NOT VALID
04-413-B001 04-413-B002	121082	SP DUI	1/8/88	0.01			NOT VALID
04-413-8002	121083	1	1/8/88	. 0.009			NOT VALID
04-413-B002 04-414-B001 04-415-B002	121086	1	1/8/88		0.016		NOT VALID
U4-415-BUUZ	121090	I	1/8/88	<.006			NOT VALID
BATCH: 121269	-121288		1/7/88	MTHCHLOR	ACETONE		ALL VALID EXCEPT AS LISTED
05-417-B301	121269	TB	1/8/88	0.017			
999MB1 999MB1	LQC121269	MB	1/8/88	< 002	<.008		
999M81	LQC121085	MB	1/8/88	<.002	<.008		
				0.085	0.04		VALID VALUES
05-416-B001 05-416-B002	121270	I	1/8/88	<.005			NOT VALID
05-416-в002	121271	I	1/8/88	<.004			NOT VALID
	LQC121272		1/9/88		- 00/		
				0.085	0.02		VALID VALUES
05-416-В102	121272	DUP	1/9/88		0.016		NOT VALID
05-416-8003	121273 121274		1/9/88				NOT VALID
05-417-B001	121274	I	1/9/88		<.012		NOT VALID
05-417-8002	121276		1/9/88		0.015		NOT VALID
999MB1	LQC121279	MB	1/11/88		<.009		
				0.085			VALID VALUES
03-418-B001	121278	I	1/11/88		0.023		NOT VALID
03-418-8101 03-419-8001	121279	DUP	1/11/88		0.033		NOT VALID
03-419-8001	121280	I	1/11/88	<.005			NOT VALID
03-419-B002	121282		1/11/88	<.005 0.008		•	NOT VALID
03-418-B002	121283	I	1/11/88	<.006	0.027		NOT VALID
03-418-B002 03-418-B003	121284	1	1/11/88		0.025		NOT VALID
03-419-8003	121285	I	1/11/88	0.009			NOT VALID
	LQC121286				<.005		
				0.085			VALID VALUES
03-420-в002	121287	I	1/12/88		0.06		NOT VALID
BATCH: 121378	-121307		1/0/00	MTUCULOD	ACCTONG	NEW TOLLENS	***************************************
02-424-B303	121307	TD	1/9/88 1/14/88	0.009	ACETONE	MEK TOLUENE	ALL VALID EXCEPT AS LISTED
999MB1	LQC121382	MD		<.004		0.015 0.006	
	LQC121397			<.004	<.008		
,,,,,,,	EGC 12 1397	MB	17 13/00	0.0/5	<.004	0.075 0.07	
05-421-B001	121378		1/12/00	0.045	0.04	0.075 0.03	VALID VALUES
05-421-8007 05-421-8002	121379	I	1/12/88 1/12/88		<.008		NOT VALID
02-422-B003	121383			. 004	0.02		NOT VALID
02-423-B003	121386		1/12/88	<.006	0.027		NOT VALID
02-423-8002 02-423-8003			1/12/88	<.006	0.024		NOT VALID
02-423-8003 02-424-8002	121387		1/12/88	<.003	0.026		NOT VALID
02-424-8002 02-424-8003	121389		1/12/88	***	0.022		NOT VALID
76-464-8003	121390	I	1/12/88	<.006	0.032		NOT VALID

MTHCHLOR - METHYLENE CHLORIDE

MEK - 2-BUTANONE

MIBK - 4-METHYL-2-PENTANONE

MB - METHOD BLANK

TB - TRIP BLANK

DUP - DUPLICATE

SP - SPIKE

SP DUP - SPIKE DUPLICATE

FIELD NUMBER	RFW NUMBER	TYPE	DATE			ANALYTES	(mg/kg)		VALIDITY
BATCH: 121468			1/11/88	MTHCHLOR			MEK	MIBK	ALL VALID EXCEPT AS LISTER
7-429-B303	121479	TR	1/18/88	0.015					
	LQC121471		1/18/88	<.001			<.006	<.002	
			1/18/88	<.001 <.001	0.012			<.002	
			., ,	0.075			0.03	0.01	VALID VALUES
7-428-B001	121471		1/18/88	<.003	0.015				NOT VALID
7-428-B002	121472		1/18/88	<.002	0.02		<.007		NOT VALID
7-428-8102	121473		1/18/88	<.002					NOT VALID
7-428-8003	121473 121474		1/18/88	•	0.046		<.011		NOT VALID
7-429-B001 7-429-B001	121476		1/19/88		<.009				NOT VALID
7-429-B001	121476	SP	1/19/88		<.007				NOT VALID
7-429-B001	121476	SP DU	1/19/88		<.007				NOT VALID
)7-429-B002	121477		1/19/88		0.027				NOT VALID
07-429-8001 07-429-8002 07-429-8003					0.02				NOT VALID
BATCH: 122410				MTHCHLOR	ACETONE				ALL VALID EXCEPT AS LISTE
11-363-B301	122411	TB	1/27/88	0.011	0.011				
	LQC122410			0.011 <.005					
999MB1	LQC122411	MB	1/27/88	<.005					
				0.055	0.055				VALID VALUES
01-363-B001			1/27/88		0.026				NOT VALID
BATCH: 123086			2/2/88		ACETONE		TOLUENE		ALL VALID EXCEPT AS LISTE
06-347-B301				0.011			0.015		
999MB1	LQC123086	S MB	2/3/88	<.002			<.004		
999MB1	LQC123087	7 MB	2/3/88				<.004		
				0.055	0.03		0.075		VALID VALUES
06-347-B001	123086	I	2/3/88		0.018		0.008		NOT VALID
999MB1	LQC123088	з мв	2/4/88			•			
				0.055	0.03		0.075		VALID VALUES
01-259-M001			2/4/88				0.065		NOT VALID
06-345-M001	123089	I	2/4/88				<.004		NOT VALID
06-345-M001	123089	I	2/4/88	0.007					NOT VALID
06-345-M001	123089	I	2/4/88		<.010				NOT VALID
BATCH: 12336	9-123370		2/3/88		ACETONE				ALL VALID EXCEPT AS LISTE
01-261-M301			2/10/88	0.01	<.004			<.004	
999BM1	LQC12337	O MB	2/10/88		<.003				VALUE VALUES
				0.05	0.02	0.005			VALID VALUES
01-261-M001							0.019		NOT VALID
	123369			0.025					NOT VALID
01-261-M001	123369	SP DU	P2/10/88	0.037					NOT VALID

MTHCHLOR - METHYLENE CHLORIDE

MEK - 2-BUTANONE

MIBK - 4-METHYL-2-PENTANONE

MB - METHOD BLANK

TB - TRIP BLANK

DUP - DUPLICATE

SP - SPIKE

SP DUP - SPIKE DUPLICATE

FIELD NUMBER	RFW NUMBER	SAMPL! TYPE	_			ANALYTES (mg/kg)	VALIDITY
BATCH: 126649	-126650		3/22/88	MTHCHLOR	ACETONE		ALL VALID EXCEPT AS LISTED
01/357-8301 999MB1	126650 LQC126649		3/24/88 3/24/88	0.015 <.005	<.006		
01-357-B001	126649	I	3/24/88	0.075	0.03 0.015		VALID VALUES

MTHCHLOR - METHYLENE CHLORIDE MEK - 2-BUTANONE MIBK - 4-METHYL-2-PENTANONE

MB - METHOD BLANK

TB - TRIP BLANK

DUP - DUPLICATE SP - SPIKE

SP DUP - SPIKE DUPLICATE

#### TABLE L-2 SOIL SEMIVOLATILE ORGANICS VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD		SAMPLE			
NUMBER	NUMBER			ANALYTES (mg/kg)	VALIDITY
BATCH: 120194				BIS(2-ETHYLHEXYL)PHTHALATE	ALL VALID EXCEPT AS LISTE
999MB1	120194	MB	1/6/88	<.08	
				0.4	VALID VALUE
05-401-B001	120194	I	1/6/88	<.14	NOT VALID
05-401-B002	120195	I	1/6/88	<.12	NOT VALID
5-401-8002	120195	SP	1/6/88	<.13	NOT VALID
5-401-B002	120195	SP DU	21/6/88	<.09	NOT VALID
5-401-B003	120196	I	1/6/88	<.18	NOT VALID
05-402-B001	120197	I	1/6/88	<.12	NOT VALID
5-402-B002	120198		1/6/88	<.13	NOT VALID
BATCH: 120305				BIS(2-ETHYLHEXYL)PHTHALATE	ALL VALID EXCEPT AS LISTE
999MB1	LQC120305	5 MB	,,	<.08	ALL THEIR EXCENT NO ETGIE
				0.4	VALID VALUE
5-402-B003	120305	I	1/7/88	<.16	NOT VALID
05-402-B003	120305		1/7/88	<.14	NOT VALID
05-402-B003			21/7/88	<.11	NOT VALID
05-403-B001	120305	I	1/7/88	<.14	NOT VALID
05-403-B002	120307	-	1/7/88	<-11	
5-403-B002	120308	-	1/7/88	<.11	NOT VALID
5-404-B001	120309		1/7/88	<.08	NOT VALID
05-404-B007	120310			<.09	NOT VALID
05-404-B002	120310		1/7/88		NOT VALID
05-405-B003	120311		1/7/88	<.1	NOT VALID
05-405-8007			1/7/88	<-16	NOT VALID
	120314	1	1/7/88	<.11	NOT VALID
05-405-B003	120315	1	1/7/88	<.15	NOT VALID
05-405-B103		I		<.09	NOT VALID
5-403-B101			1/7/88	<.11	NOT VALID
BATCH: 121270			1/7/88		ALL VALID
BATCH: 121378			1/9/88		ALL VALID
BATCH: 121468	-121479 		1/11/88		ALL VALID
BATCH: 122410			1/25/88		ALL VALID
BATCH: 123086			2/2/88		ALL VALID
BATCH: 123369			2/9/88		ALL VALID
BATCH: 126649			3/22/88	BIS(2-ETHYLHEXYL)PHTHALATE	ALL VALID
799MB1	126649		4/8/88	0.03 0.15	VALID VALUE
				0.13	AVEID AVENE

TB - TRIP BLANK DUP - DUPLICATE

SP DUP - SPIKE DUPLICATE

DUP - DUPLICATE . I - INVESTIGATIVE DATES REFER TO DATES BATCHES WERE SHIPPED AND SAMPLES ANALYZED

### TABLE L-3 SOIL METAL VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

	RFW NUMBER			ANA	LYTES (mg/kg	) VALIDITY
					(	***************************************
BATCH: 120193						ALL VALID
BATCH: 120305	-120317		12/17/87			ALL VALID
BATCH: 121270	-121288		1/7/88			ALL VALID
BATCH: 121378	3-121397		1/9/88	COPPER	IRON	ALL VALID EXCEPT AS LISTED
999PB1	LQI 121378	MB	1/15/88			
999MB1	LQI 121390	MB	1/19/88	4.2	4.4	•
999PB1	LQI 121390 LQI 121390	MB	1/19/88	4.2	4.4	
				21	22	VALID VALUES
05-421-8003 02-422-8001 02-423-8001	121380	1	1/18/88	8.7		NOT VALID
02-422-B001	121381	ī	1/18/88	12		NOT VALID
02-423-B001	121384	I	1/18/88	5		NOT VALID
02-423-B101 02-424-B001 02-424-B002	121385	D	1/18/88	8.5		NOT VALID
02-424-8001	121386	1	1/19/88	8.8		NOT VALID
02-424-B002	121389	1	1/19/88	8.8 19.4		NOT VALID
08-425-B001	121391	1	1/19/88	6.9		NOT VALID
08-425-8001 08-425-8002 08-425-8003	121392	ī	1/19/88	20.5		NOT VALID
08-425-B003	121393	I	1/19/88	17.7		NOT VALID
08-426-B001	121394	I	1/19/88	12.3		NOT VALID
08-426-B002	121395	I	1/19/88	19.5		NOT VALID
08-426-B001 08-426-B002 08-426-B003	121396	I	1/19/88	20.6		NOT VALID
BATCH: 121468 999MB1	3-121479		1/11/88	COPPER	IRON	ALL VALID EXCEPT AS LISTED
999MB1	LQI121390	MB	1/19/88	4.2	4.4	
999PB1	LQI121390	MB	1/19/88	4.2	4.4	
				21	22	VALID VALUES NOT VALID
08-427-B001	121468	I	1/19/88	3.7		NOT VALID
08-427-B002	121469	I	1/19/88	18.7		NOT VALID
08-427-B002 08-427-B003	121470	I	1/19/88	16		NOT VALID .
BATCH: 122410						ALL VALID
999MB1	101122410	MR	2/12/88	11 1	22 0	
***********				55.5	114.5	VALID VALUES
BATCH: 123086	-123089		2/2/88	COBALT	ZINC	ALL VALID EXCEPT AS LISTED
999MB1	LQC122879		2/17/88	12.9	1.6	
	_			64.5	8	VALID VALUES
06-347-B001 06-347-B001	123086	I	2/17/88	16		NOT VALID
06-347-B001	123086	SP	2/17/88	16.8		NOT VALID
01-359-M001	f 123088	I	2/17/88	11.9		NOT VALID
06-345-M001	123089	I	2/17/88			NOT VALID
BATCH: 126649			3/22/88	ZINC		***************************************
999MB1	126649	MB		1		ALL VALID
				5		VALID VALUE
						***************************************
MB - METHOD B			SP - SPI			
DUP - DUPLICA	TE		SD SHD -	SPIKE DIE	DITCATE	

DUP - DUPLICATE

SP SUP - SPIKE DUPLICATE

I - INVESTIGATIVE

DATES REFER TO DATES BATCHES WERE SHIPPED AND SAMPLES ANALYZED

#### TABLE L-4 WATER VOLATILE ORGANICS VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD NUMBER		TYPE	DATE			(ug/L)	VALIDITY
BATCH: 12764	5-127652		4/6/88	MTHCHLOR			ALL VALID EXCEPT AS LISTED
01-124-M201	127652	EB	4/13/88	2	6.5		
01-124-M301 01-124-M401	127653	TB	4/13/88	8		3	
01-124-M401	127654	AB	4/13/88		7.4		
999SB1	LQC127645	MB SP	4/13/88	2			
999SB1	LQC127647	MB SP	4/20/88				
		•		40	37	15	VALID VALUES
01-124-M001	127647	I	4/12/88	14			NOT VALID
01-125-M001	127648	I	4/12/88	2			NOT VALID
BATCH: 12769	1-127704		4/6/88	MTHCHLOR			ALL VALID EXCEPT AS LISTED
02-165-M201 02-165-M401	127696	EB	4/14/88	5	4.9		
02-165-M401	127697	AB	4/14/88		5.8		
03-118-M301							
999MB1	LQC127647	MB	4/20/88				
999SB1	LCC127647	MB SP	4/20/88				
999MB1							
999SB1	LQC127692	MB SP	4/14/88				
999MB1	LQC127697	MB	4/13/88				
				25	29		VALID VALUES
02-165-M001	127694	I	4/13/88	6			NOT VALID
02-165-M001 02-165-M101 03-116-M501	127695	DUP	4/13/88	2			NOT VALID
03-116-M501	127700	SP	4/14/88	3		_	NOT VALID
DATOU: 12700	427040						ALL VALUE CYCENT AS LICTED
BATCH: 127804 06-247-M301		TO	/ /10 /00	MTHCHLOR			ALL VALID EXCEPT AS LISTED
				-			
999SB1				2 10			VALID VALUE
06-108-M001	127804	I	4/20/88				NOT VALID
06-247-M001	127809	1	4/20/88	3			NOT VALID
BATCH: 12785	7-127864		4/9/88	MTHCHLOR			ALL VALID
04-154-M301	127858	TB	4/17/88				
06-144-M201	127863	EB	4/18/88		4.9		
06-144-M201 06-144-M401	127864	EB	4/18/88	4	3.1		
				· 20	24.5		VALID VALUES

I - INVESTIGATIVE TB - TRIP BLANK

AB - AMBIENT BLANK

DUP - DUPLICATE MB - METHOD BLANK SP MP - METHOD SPIKE

EB - EQUIPMENT BLANK

MTHCHLOR - METHYLENE CHLORIDE

SP - SPIKE

TCLME - CHLOROFORM

SP DUP - SPIKE DUPLICATE

BDCME - BROMODICHLOROMETHANE

DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

NUMBER NUMBER TYPE DATE ANALYTES (ug/L) VALIDITY  BATCH: 128911-128953	FIELD	RFW.	SAMPLE			•••••	
BATCH: 128911-128953	NUMBER	NUMBER	TYPE	DATE		ANALYTES (ug/L)	VALIDITY
05-130-H201 128935 EB 5/02/88 3.6 0.5 05-130-H401 128948 EB 4/28/88 3.4 07-136-H201 128949 AB 5/02/88 3.4 07-136-H201 128949 AB 4/28/88 07-136-H201 128949 AB 4/28/88 07-136-H201 128949 AB 4/28/88 01-503-H201 128918 EB 5/1/88 3.8 01-503-H201 128919 AB 5/1/88 3.1 04-512-H201 128930 AB 4/27/88 04-512-H201 128930 AB 4/27/88 02-508-H201 128930 AB 4/27/88 02-508-H201 128930 AB 4/27/88 02-508-H201 128930 AB 4/27/88 02-508-H201 128930 AB 4/27/88 4 NOT VALID 02-509-H201 128924 I 5/01/88 4 NOT VALID 02-509-H201 128937 I 4/27/88 0.6 NOT VALID 06-520-H201 128943 I 5/02/88 0.3 NOT VALID 06-520-H201 128943 I 5/02/88 0.3 NOT VALID 06-520-H201 128943 I 5/02/88 0.3 NOT VALID 06-520-H201 128943 I 5/03/88 0.4 07-102-H201 129021 AB 4/28/88 07-102-H201 129021 AB 5/03/88 07-102-H201 129021 AB 5/03/88 07-103-H201 129021 AB 5/17/88 0.4 07-102-H201 129021 AB 5/17/88 0.4 07-102-H201 129021 AB 5/17/88 0.4 07-103-H201 12903  AB 5/17/88 0.6 07-103-H202 130183 AB 5/17/88 0.6 07-103-H202 130183 AB 5/17/88 0.6 07-103-H202 130183 AB 5/17/88 0.6 07-103-H202 130183 AB 5/17/88 0.6 07-103-H202 130187 AB 5/16/88					TCLME	BDCME	ALL VALID EXCEPT AS LISTED
05-130-H401 128936 AB 5/02/88 3.4 07-136-M201 128948 EB 4/28/88 07-136-M401 128949 AB 4/28/88 18 2.5 VALID VALUES  05-518-M301 128941 TB 5/02/88 01-503-W201 128918 EB 5/1/88 3.8 01-503-W201 128919 AB 5/1/88 3.1 04-512-W201 128930 AB 4/27/88 04-512-W401 128930 AB 4/27/88 04-512-W401 128930 AB 4/27/88 02-508-W001 128924 I 5/01/88 4 NOT VALID 02-509-W001 128925 I 5/02/88 2 NOT VALID 01-514-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/03/88 0.4 07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129017-129025 4/21/88 TCLME ALL VALID  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID  BATCH: 130178-130211 5/11/88 3.6 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130196 EB 5/16/88	05-518-W301	128941	TB	5/02/88			
07-136-M401 128949 AB 4/28/88 07-136-M401 128949 AB 4/28/88 05-518-W301 128941 TB 5/02/88 01-503-W201 128918 EB 5/1/88 3.8 01-503-W201 128919 AB 5/1/88 3.1 04-512-W201 128930 EB 4/27/88 04-512-W201 128930 AB 4/27/88 04-512-W401 128930 AB 4/27/88 04-512-W001 128924 I 5/01/88 4 NOT VALID 02-508-W001 128925 I 5/02/88 2 NOT VALID 02-509-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/03/88 0.4 07-102-M401 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID 05-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130197 AB 5/16/88	05-130-M201	128935	EB	5/02/88	3.6	0.5	
07-136-M401 128949 AB 4/28/88 07-136-M401 128949 AB 4/28/88 05-518-W301 128941 TB 5/02/88 01-503-W201 128918 EB 5/1/88 3.8 01-503-W201 128919 AB 5/1/88 3.1 04-512-W201 128930 EB 4/27/88 04-512-W201 128930 AB 4/27/88 04-512-W401 128930 AB 4/27/88 04-512-W001 128924 I 5/01/88 4 NOT VALID 02-508-W001 128925 I 5/02/88 2 NOT VALID 02-509-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/03/88 0.4 07-102-M401 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID 05-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130197 AB 5/16/88	05-130-M401	128936	AB	5/02/88	3.4		
07-136-M401 128949 AB 4/28/88  05-518-W301 128941 TB 5/02/88 01-503-W201 128918 EB 5/1/88 3.8 01-503-W201 128919 AB 5/1/88 3.1 04-512-W201 128930 EB 4/27/88 04-512-W401 128930 AB 4/27/88 04-512-W401 128930 AB 4/27/88  02-508-W001 128924 I 5/01/88 4 NOT VALID 02-509-W001 128925 I 5/02/88 2 NOT VALID 01-514-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.4 07-102-M401 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID 05-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130197 AB 5/16/88	07-136-M201	128948	EB	4/28/88			
05-518-W301 128941 TB 5/02/88 01-503-W201 128918 EB 5/1/88 3.8 01-503-W201 128919 AB 5/1/88 3.1 04-512-W201 128930 EB 4/27/88 04-512-W401 128930 AB 4/27/88 04-512-W401 128930 AB 4/27/88  02-508-W001 128924 I 5/01/88 4 NOT VALID 02-509-W001 128925 I 5/02/88 2 NOT VALID 01-514-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID  BATCH: 129017-129025 4/21/88 TCLME ALL VALID  05-132-M301 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88 2 VALID VALUE  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID  02-507-W302 130189 TB 5/17/88 01-503-W202 130189 TB 5/17/88 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130197 AB 5/16/88	07-136-M401	128949	AB				
01-503-W201 128918 EB 5/1/88 3.8 01-503-W401 128919 AB 5/1/88 3.1 04-512-W201 128930 EB 4/27/88 04-512-W201 128930 AB 4/27/88  19 VALID VALUES 02-508-W001 128924 I 5/01/88 4 NOT VALID 02-509-W001 128925 I 5/02/88 2 NOT VALID 01-514-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID  BATCH: 129017-129025 4/21/88 TCLME ALL VALID 05-132-M301 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88 2 VALID VALUE  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID 02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130196 EB 5/16/88					18	2.5	VALID VALUES
01-503-W401 128919 AB 5/1/88 3.1 04-512-W201 128930 EB 4/27/88 04-512-W401 128930 AB 4/27/88  02-508-W001 128924 I 5/01/88 4 NOT VALID 02-509-W001 128925 I 5/02/88 2 NOT VALID 01-514-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID 07-102-M401 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID 05-503-W202 130189 TB 5/17/88 3.6 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130182 EB 5/17/88 3.6 01-503-W402 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88	05-518-W301	128941	TB	5/02/88			
04-512-W201 128930 EB 4/27/88 04-512-W401 128930 AB 4/27/88	01-503-W201	128918	EB	5/1/88	3.8		
04-512-W201 128930 EB 4/27/88 04-512-W401 128930 AB 4/27/88	01-503-W401	128919	AB	5/1/88	3.1		
19	04-512-W201		EB	. 4/27/88			•
19	04-512-W401	128930	AB	4/27/88		*	
02-509-W001 128925 I 5/02/88 2 NOT VALID 01-514-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID  BATCH: 129017-129025 4/21/88 TCLME ALL VALID 05-132-M301 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062 ALL VALID  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTED 02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130197 AB 5/16/88					19		VALID VALUES
02-509-W001 128925 I 5/02/88 2 NOT VALID 01-514-W001 128937 I 4/27/88 0.6 NOT VALID 06-520-W001 128943 I 5/02/88 0.3 NOT VALID  BATCH: 129017-129025 4/21/88 TCLME ALL VALID 05-132-M301 129018 TB 5/03/88 0.4 07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062 ALL VALID  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTED 02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W202 130197 AB 5/16/88	02-508-W001	128924	I	5/01/88	4		
06-520-W001 128943 I 5/02/88 0.3 NOT VALID  BATCH: 129017-129025 4/21/88 TCLME ALL VALID  05-132-M301 129018 TB 5/03/88 0.4  07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062  05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTER 02-507-W302 130189 TB 5/17/88  01-503-W202 130182 EB 5/17/88 3.6  01-503-W402 130183 AB 5/17/88 6 0.7  04-512-W402 130196 EB 5/16/88  04-512-W402 130197 AB 5/16/88	02-509-W001	128925	I	5/02/88	2	•	
BATCH: 129017-129025	01-514-W001	128937	I		0.6		
BATCH: 129017-129025	06-520-W001	128943	I	5/02/88			
05-132-M301 129018 TB 5/03/88 0.4  07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062  05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTER 02-507-W302 130189 TB 5/17/88  01-503-W202 130182 EB 5/17/88 3.6  01-503-W402 130183 AB 5/17/88 6 0.7  04-512-W202 130196 EB 5/16/88  04-512-W402 130197 AB 5/16/88							
07-102-M401 129021 AB 4/28/88  2 VALID VALUE  BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTER 02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 3.6 01-503-W402 130183 AB 5/17/88 6 0.7 04-512-W402 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88							ALL VALID .
BATCH: 129059-129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTER 02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 3.6 01-503-W202 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88	05-132-M301	129018	TB	5/03/88	0.4		
BATCH: 129059-129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTED 02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 3.6 01-503-W402 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88	07-102-M401	129021	AB	4/28/88			
BATCH: 129059-129062 05-231-M301 129062 TB 5/03/88  BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTED CONTROL TO THE CONTRO	*************				2		
BATCH: 130178-130211 5/11/88 TCLME BDCME ALL VALID EXCEPT AS LISTED 02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 3.6 01-503-W402 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88							· · · · · · · · · · · · · · · · · · ·
02-507-W302 130189 TB 5/17/88 01-503-W202 130182 EB 5/17/88 3.6 01-503-W402 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88	05-231-M301	129062	ТВ	5/03/88			
01-503-W202 130182 EB 5/17/88 3.6 01-503-W402 130183 AB 5/17/88 6 0.7 04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88	BATCH: 130178	3-130211		5/11/88	TCLME	BDCME	ALL VALID EXCEPT AS LISTED
04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88	02-507-W302	130189	TB	5/17/88			
04-512-W202 130196 EB 5/16/88 04-512-W402 130197 AB 5/16/88	01-503-W202	130182	EB	5/17/88	3.6		
04-512-W402 130197 AB 5/16/88	01-503-W402	130183	AB	5/17/88	6	0.7	
	04-512-W202	130196	EB				
30 3 5 VALID VALUE	04-512-W402	130197	AB	5/16/88			•
					<sup>-</sup> 30	3.5	VALID VALUES
01-503-W002 130180 I 5/17/88 4.5 NOT VALID	01-503-W002	130180	_	-			NOT VALID
05-516-W002 130201 I 5/18/88 0.9 NOT VALID	05-516-W002	130201	_				NOT VALID
05-516-W502 130202 SP 5/18/88 2 NOT VALID							NOT VALID
05-516-W602 130203 SP DUP 5/18/88 1.8 NOT VALID 05-517-W002 130204 I 5/18/88 2.7 NOT VALID	05-516-W602	130203					NOT VALID
			-				NOT VALID
05-518-W002 130205 I 5/18/88 3 NOT VALID	05-518-W002	130205	I	5/18/88	3		NOT VALID

I - INVESTIGATIVE DUP - DUPLICATE
TB - TRIP BLANK MB - METHOD BLANK
AB - AMBIENT BLANK . SP MP - METHOD SPIKE
EB - EQUIPMENT BLANK MTHCHOR - METHOLENE CHLORIDE

SP - SPIKE

TCLME - CHLOROFORM

SP DUP - SPIKE DUPLICATE

BDCME - BROMODICHLOROMETHANE

DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

	NUMBER	TYPE	DATE		ANALYTES (ug/L)											
BATCH: 127953-1	127959		4/10/88			ALL VALID										
04-255-M301				4												
04-115-M201																
04-115-M401	127959	AM	4/20/88	20		VALID VALUE										
••••••																
Batch: 127960-1						ALL VALID										
04-255-M301	127985	TB	4/20/88	4												
				20		VALID VALUE .										
	27095	• • • • • • •	/ /11 /00			· ALL VALED										
Batch: 127963-1 04-255-M301	127085	TR	4/11/00	4		ALL VALID										
J4 E33 11301	121703	13	4/20/00	20		VALID VALUE										
04-112-M001	127963	I	4/18/88			NOT VALID										
04-112-M601						NOT VALID										
BATCH: 128048-1 05-235-M301						'ALL VALID										
100%-502	120030	15														
BATCH: 128174-1	128175					ALL VALID										
05-134-M301																
BATCH: 128520-1						ALL VALID										
07-138-M310						ALL VALID										
			DUP - DUPLICATE  MB - METHOD BLANK  SP MP - METHOD SPIKE  MTHCHLOR - METHYLENE CHLORIDE													
										DLANK			CHLOROFOR			
									SP DUP - SPIKE					OROMETHANE		
ATES REFER TO																

#### TABLE L-5 WATER SEMIVOLATILE ORGANICS VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD							
NUMBER	RFW NUMBER		. DATE		ANALYTES	(mg/L)	VALIDITY
BATCH: 12764!	5-127652		4/6/88	BZEHP			ALL VALID EXCEPT AS LISTED
01-124-M201	127652		4/11/88				
999MB1	LQC127646		4/08/88				
				10			VALID VALUE
01-122-M001	127645	I	4/13/88	<2			NOT VALID
01-124-M001	127647	1	4/11/88	<1		•	NOT VALID .
01-162-M001	127650	I	4/08/88	<1			NOT VALID
01-162-M001	127650	SP	4/08/88	<4			NOT VALID
01-162-M001 01-162-M001	127650	SP DUP	4/08/88	<2			NOT VALID
BATCH: 12769	1-127809	• • • • • • • • • • • • • • • • • • • •	4/6/88	VEDR			ALL VALID EXCEPT AS LISTED
999MB1		MR	4/14/88	VEF 11 <2			ALL VALID EXCEPT AS LISTED
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	240127071	PIO	47 147 00	10			VALID VALUE
01-160-M001	127692		4/14/88	<1			NOT VALID
06-108-M001	127804	i	4/14/88	<1			NOT VALID
01-160-M001 06-108-M001 06-109-M001	127805	ī	4/14/88	<1			NOT VALID
BATCH: 12786			4/9/88	DEPH	BZEHP	DNPB	ALL VALID EXCEPT AS LISTED
999MB1		MB	4/14/88	<2			
06-144-M201	127863	EB	4/15/88	<2	48	<2	
				10	240	10	VALID VALUE
06-144-M001	127861	1	4/15/88		<5	<2 <3	NOT VALID
06-144-M101	127862	I	4/15/88		<1	<3	NOT VALID
BATCH: 127953			4/7/88				ALL VALID EXCEPT AS LISTED
999MB1	LQC127953	MB	4/19/88	<1			
				5			VALID VALUE
06-245-M001	127953	I	4/19/88	<1			NOT VALID
BATCH: 128048	3-128055						ALL VALID EXCEPT AS LISTED
	LQC128048						WEE AWEID EXCELL WE FIRED
	F4C 150040		7/17/00	5			VALID VALUE
01-257-M001	128048	T	4/10/88	<1			
01-263-M001	128051	,	4/10/82	<1			NOT VALID NOT VALID
		ī	4/20/88	<1			NOT VALID
		•	-1, LU/ 00	``			HO! TACID

I - INVESTIGATIVE

DUP - DUPLICATE

EB - EQUIPMENT BLANK

SP - SPIKE

MB - METHOD BLANK

BZEHP - BIS(2-ETHYLHEXYL)PHTHALATE

SP MP - METHOD SPIKE

SP DUP - SPIKE DUPLICATE

DEHP - DIETHTLERIBAGO...
DNPB - DI-N-BUTYLPHTHALATE DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

175 128175 523 28522 28521 28523	TYPE I	DATE 4/12/88 4/14/88 4/19/88	DNPB <1 5		VALIDITY  ALL VALID  VALID VALUE  ALL VALID EXCEPT AS LISTED
175 128175 523 28522 28521 28523	I	4/12/88 4/14/88 4/19/88	DNPB <1 5		ALL VALID VALID VALUE
175 128175 		4/12/88 4/14/88 4/19/88	DNPB <1 5		ALL VALID  VALID VALUE
128175 523 28522 28521 28523		4/14/88  4/19/88	<1 5 BZEHP		VALID VALUE
523 28522 28521 28523		 4/19/88	BZEHP		•••••
28522 28521 28523	EB DUP I	4/19/88 4/21/88 4/21/88	BZEHP		•••••
28522 28521 28523	EB DUP I	4/19/88 4/21/88 4/21/88	BZEHP <3 15	•••••	ALL VALID EXCEPT AS LISTED
28522 28521 28523	EB DUP I	4/21/88 4/21/88	43 15		ALL VALID EXCEPT AS LISTED
28521 28523	DUP	4/21/88	15		
	DUP	4/21/88	15		
	I	4/21/00	-1		VALID VALUES
	1	/ /24 /00	<4	•	NOT VALID
• • • • • • • • • • • • • • • • • • • •		4/21/88	<4		NOT VALID
953		4/21/88	BZEHP	,	ALL VALID EXCEPT AS LISTED
28935	ЕB	4/27/88	<7		
			35		VALID VALUES
28934	I	4/27/88	<1		NOT VALID
28918	EB	4/27/88	12		
			60		VALID VALUES
28911	1	4/25/88	22		NOT VALID
28912	SP	4/25/88	25		NOT VALID
28017 cc	מנות כ	1.125 199	-4		NOT VALID
28914	I	4/26/88	<2		NOT VALID
28915	I	4/26/88	<2		NOT VALID
28916	I	4/25/88	<2		NOT VALID
28920	I	4/27/88	34		NOT VALID
28921	- I	4/27/88	25		NOT VALID
28937	ĭ	4/27/88	<2		NOT VALID
28938	I	4/27/88	<2		NOT VALID
28939	I	4/27/88	<7		NOT VALID
28940	1	4/27/88	13		NOT VALID
28942	I	4/27/88	25		NOT VALID
060	•	4/21/88			ALL VALID
					ALL VALID
222222222222222222222222222222222222222	8934 8918 8911 8912 8913 SI 8914 8915 8921 8921 8937 8938 8938 8938 8938 8939 8940 8942	8934 I 8918 EB 8911 I 8912 SP 8913 SP DUP 8914 I 8915 I 8916 I 8920 I 8921 I 8937 I 8938 I 8939 I 8939 I 8939 I	8934 I 4/27/88 8918 EB 4/27/88 8911 I 4/25/88 8912 SP 4/25/88 8913 SP DUP 4/25/88 8914 I 4/26/88 8915 I 4/26/88 8916 I 4/25/88 8920 I 4/27/88 8921 I 4/27/88 8937 I 4/27/88 8938 I 4/27/88 8939 I 4/27/88 8940 I 4/27/88	8934 I 4/27/88 <1 8918 EB 4/27/88 12 60 8911 I 4/25/88 22 8912 SP 4/25/88 25 8913 SP DUP 4/25/88 <6 8914 I 4/26/88 <2 8915 I 4/26/88 <2 8916 I 4/25/88 34 8920 I 4/27/88 34 8921 I 4/27/88 25 8937 I 4/27/88 <2 8938 I 4/27/88 <2 8939 I 4/27/88 <2 8939 I 4/27/88 <2 8939 I 4/27/88 <2 8939 I 4/27/88 <2 8939 I 4/27/88 <2 8939 I 4/27/88 <2 8940 I 4/27/88 25 8940 I 4/27/88 25	8934 I 4/27/88 <1 8918 EB 4/27/88 12 60 8911 I 4/25/88 22 8912 SP 4/25/88 25 8913 SP DUP 4/25/88 <6 8914 I 4/26/88 <2 8915 I 4/26/88 <2 8916 I 4/25/88 34 8920 I 4/27/88 35 8921 I 4/27/88 25 8937 I 4/27/88 25 8938 I 4/27/88 <2 8939 I 4/27/88 <2 8939 I 4/27/88 33 8940 I 4/27/88 35 8940 I 4/27/88 25

I - INVESTIGATIVE EB - EQUIPMENT BLANK DUP - DUPLICATE

SP - SPIKE

MB - METHOD BLANK

BZEHP - BIS(2-ETHYLHEXYL)PHTHALATE DEHP - DIETHYLPHTHALATE

SP MP - METHOD SPIKE

SP DUP - SPIKE DUPLICATE DNPB - DI-N-BUTYLPHTHALATE DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

L-12

	RFW NUMBER		DATE		ANALYTES (mg/L)	VALIDITY
BATCH: 130178	3-130199	*******	5/11/88	BZEHP		ALL VALID EXCEPT AS LISTED
BATCH: 130178 01-503-W202	130182	EB	5/17/88			
999MB1	LQC130178		5/17/88			
				125		VALID VALUES
01-501-W002	130178	1	5/17/88	58		NOT VALID
01-502-W002	130179		5/17/88			NOT VALID
01-503-W002	130180	1	5/17/88	22		NOT VALID
01-503-W102	130181	DUP	5/17/88	45	•	NOT VALID
		I	5/17/88	18		NOT VALID
01-504-W502	130185	SP	5/17/88	20		NOT VALID
		SP DUP	5/17/88	22		NOT VALID
01-505-W002	130187	1	5/17/88	28		NOT VALID
05-514-W002	130199	I	5/17/88	32	·	NOT VALID
						•••••••
BATCH: 130200						ALL VALID EXCEPT AS LISTED
01-503-W202						•
999MB1						·
999SB1	LQC130200	MB SP	5/19/88			
05 545				90		VALID VALUE
05-515-W002	130200					NOT VALID
			5/19/88			NOT VALID
	130202	SP	5/19/88	19	•	NOT VALID
			5/19/88	19	•	NOT VALID
05-517-W002		I	5/19/88	25		NOT VALID
05-518-W002				19		NOT VALID
			5/19/88			NOT VALID
06-520-W002	130207	I	5/19/88	21		NOT VALID

I - INVESTIGATIVE

DUP - DUPLICATE

EB - EQUIPMENT BLANK MB - METHOD BLANK

SP - SPIKE BZEHP - BIS(2-ETHYLHEXYL)PHTHALATE

SP MP - METHOD SPIKE SP DUP - SPIKE DUPLICATE

DEHP - DIETHYLPHTHALATE

DNPB - DI-N-BUTYLPHTHALATE

DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

### TABLE L-6 WATER INORGANIC VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD NUMBER	NUMBER	TYPE	DATE			ANALYTES	(mg/L)		VALIDITY
BATCH: 1276									ALL VALID EXCEPT AS LISTE
01-124-H201			4/06/88		0.1		11		
02-165-M201			4/07/88						
				160	2.5	2	55		VALID VALUES
01-122-M001	127645	I	4/06/88		0.3	0.6*			NOT VALID
01-123-M001			4/06/88	64*	0.4	0.6*			NOT VALID
01-124-M001			4/06/88		0.3				NOT VALID
01-125-M001			4/06/88	_		2.1*			NOT VALID
01-156-M001			4/06/88		0.2	0.6*			NOT VALID
01-162-M001			4/06/88		0.2				NOT VALID
01-122-M101			4/06/88		0.2	0.9*			NOT VALID
01-160-M001		1	4/06/88			0.8*			NOT VALID
02-164-M001		-	4/07/88		0.2				NOT VALID
02-165-M001		Ī	4/07/88		0.2				NOT VALID
02-165-M101			4/07/88		0.2				NOT VALID
02-166-M001			4/07/88		0.2				NOT VALID
03-116-M001			4/07/88		0.2 0.2 0.2				NOT VALID
03-116-M601					0.2				NOT VALID
03-117-H001	127702	j. 50.	4/07/88						
									NOT VALID
					AMMONIA	TOC	TDS	PHC	ALL VALID EXCEPT AS LISTE
06-144-M201	127863	EB	4/09/88	0.5	0.3	1.8	10	2	
				2.5	1.5	9	50	2 10	VALID VALUES
03-118-M001	127703	I	4/07/88	0.2		•			NOT VALID
06-108-M001	127804	I	4/08/88	0.2	0.3				NOT VALID
06-109-H001	127805	I	4/08/88	0.4					NOT VALID
06-110-M001	127806	I	4/08/88	0.4	0.6	3.6			NOT VALID
06-110-M601	127808	SP DUP	4/08/88	0.4	0.6	3.4 3.8		2 10 2 1	NOT VALID
06-247-M001	127809	I	4/08/88	0.6	0.9	3.8		2	NOT VALID
04-154-M001	127857	1	4/09/88	0.2				1	NOT VALID
04-251-M001	127859	I	4/09/88	0.9					NOT VALID
04-253-M001	127860	I	4/09/88	0.8					NOT VALID
06-144-M001	127861	I	4/09/88	0.2					NOT VALID
06-144-M101	127862	DUP	4/09/88	0.2					NOT VALID
06-245-M001	127953	I	4/10/88	1	1.5				NOT VALID
06-146-H001			4/11/88	0.3	. 0.5	4.6			NOT VALID
04-111-H001	127955	I	4/11/88	1.4					NOT VALID
04-115-M001									NOT VALID
04-115-H101									NOT VALID

I - INVESTIGATIVE

DATES REFER TO WHEN BATCH WAS SHIUPPED AND WHEN SAMPLE WAS TAKEN.

ALK - ALKALINITY

EB - EQUIPMENT BLANK

COD - CHEMICAL OXYGEN DEMAND

MB - METHOD BLANK

TOC - TOTAL OXYGEN CARBON

SP MP - METHOD SPIKE TDS - TOTAL DISSOLVED SOLIDS SP DUP - SPIKE DUPLICATE PHC - PETROLEUM HYDROCARBONS

DUP - DUPLICATE

SP - SPIKE

<sup>\*</sup> INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

### TABLE L-6 (Continued) WATER INORGANIC VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE				NALYTES (ma/L)	VALIDITY
						(mg/L)	VALIDITY
BATCH: 1279				FLUORIDE			ALL VALID EXCEPT AS LISTED
04-115-M201	127958	EB	4/11/88		*	•	
				2.5			VALID VALUE
04-249-M001							NOT VALID
04-255-M001		1	4/10/88				NOT VALID
04-150-M001		1	4/11/88				NOT VALID
04-112-M001		I					NOT VALID
04-112-M601							NOT VALID
01-257-M001		1	4/12/88				NOT VALID
01-259-M001		I	4/12/88				NOT VALID
01-261-M001		1	4/12/88	0.2			NOT VALID
01-263-M001		Ī	4/12/88	0.3			NOT VALID
04-113-M001		I	4/12/88				NOT VALID
04-148-M001		I	4/12/88	0.3			NOT VALID
05-105-M001		I	4/12/88	0.3			NOT VALID
05-235-M001.	128055	I	4/12/88	0.6			NOT VALID
04-152-M001		I	4/13/88	0.2			NOT VALID
05-134-M001		I	4/13/88	0.2			NOT VALID
07-138-M001		I	4/13/88	0.2			NOT VALID '
BATCH: 1285	18-12892	5	4/18/88	COD	FLUORIDE	TDS	ALL VALID
08-127-M201			4/19/88		0.7	26	ALE VALID
					3.5	130	VALID VALUES
07-239-M001	128518	I	4/18/88		0.6		NOT VALID
07-241-M001	128519	I	4/18/88		0.4		NOT VALID
08-127-M001	128520	1	4/19/88		0.1		NOT VALID
08-127-M101	128521	DUP	4/19/88		0.1		NOT VALID
08-129-M001	128523	Ī	4/19/88				NOT VALID
01-503-W201	128918	EB			0.6		NOT THEIR
				35	3		VALID VALUES
05-516-W001		I		26	0.2		NOT VALID
05-516-W601	128913	SP DUP	4/20/88	25	0.2		NOT VALID
01-501-W001	128914		4/20/88		0.2		NOT VALID
01-502-W001	128915	I	4/20/88		0.2		NOT VALID
01-503-W001	128916	1	4/20/88		0.2		NOT VALID
01-503-W101		DUP	4/20/88		0.2	4	NOT VALID
01-504-W001	128920	I	4/20/88	22	0.1	* *	NOT VALID
01-505-W001		I	4/20/88	10	0.2		NOT VALID
02-506-W001	128922	I	_		0.1		NOT VALID
02-507-W001		I			0.5		NOT VALID
02-508-W001			4/20/88		. 0.1		NOT VALID
02-509-W001			4/20/88		0.1		1107 1141 10
							NOT VALID

I - INVESTIGATIVE

ALK - ALKALINITY

EB - EQUIPMENT BLANK

COD - CHEMICAL OXYGEN DEMAND

MB - METHOD BLANK

TOC - TOTAL OXYGEN CARBON

SP MP - METHOD SPIKE

TDS - TOTAL DISSOLVED SOLIDS SP DUP - SPIKE DUPLICATE PHC - PETROLEUM HYDROCARBONS

DUP - DUPLICATE

SP - SPIKE

DATES REFER TO WHEN BATCH WAS SHIUPPED AND WHEN SAMPLE WAS TAKEN.

<sup>\*</sup> INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

### TABLE L-6 (Continued) WATER INORGANIC VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD						41141 VTEC	(1.)			VA) IDITY
NUMBER	NUMBER									VALIDITY
BATCH: 12892										ALL VALID EXCEPT AS LISTED
05-130-M201	128935	EB	4/21/88	7	0.7	0.1	1.5	18	1.2	
07-136-M201	128948	EB			0.7				1.5	
				35	3.5	0.5	7.5	90	7.5	VALID VALUES
05-130-M001	128933	I	4/21/88		0.1				2.2	NOT VALID
05-130-M101	128934	1	4/21/88		0.1				1.8	NOT VALID
07-103-M001	128944	I	4/20/88		0.3				1.1	NOT VALID
07-104-M001	128945	I	4/21/88		0.6					NOT VALID
07-136-M001	128946	I	4/21/88		0.7				4.3	NOT VALID
07-136-M101	128947	I	4/21/88		0.7				2	NOT VALID
01-503-W201	128918	EB	4/20/88	7	0.6					
				35	3					VALID VALUES
04-510-W001	128926	I	4/20/88		0.1			,		NOT VALID
04-511-W001	128927	I	4/20/88		0.1					NOT VALID
04-512-W001	128928	I	4/20/88		0.3					NOT VALID
04-512-W101	128929	1	4/20/88		0.2					NOT VALID
04-513-W001	128932	I	4/20/88		0.3					NOT VALID
05-514-W001	128937	I	4/20/88	24	0.2				•	NOT VALID
05-514-W001	128937	SP DUP	4/20/88	24 24	0.2					NOT VALID
05-515-W001	128938	I	4/20/88		0.2					NOT VALID
05-517-W001	128939	ľ	4/20/88	19	0.1					NOT VALID
05-518-W001	128940	1	4/20/88	19	0.2					NOT VALID
06-519-W001	128942	I	4/20/88		0.3					NOT VALID
06-520-W001	128943	I	4/20/88		0.1					NOT VALID
07-521-W001	128950	I	4/20/88		1.5					NOT VALID
07-522-W001	128951	I	4/20/88		0.3					NOT VALID
07-523-W001	128952	I	4/20/88		0.2					NOT VALID
07-524-W001	128953	I	4/20/88		0.1					NOT VALID
BATCH: 1290			,							ALL VALID
BATCH: 1290			/. /27 /88							ALL VALID

I - INVESTIGATIVE ALK - ALKALINITY
EB - EQUIPMENT BLANK COD - CHEMICAL OXYGEN DEMAND
MB - METHOD BLANK TOC - TOTAL OXYGEN CARBON
SP MP - METHOD SPIKE TDS -- TOTAL DISSOLVED SOLIDS
SP DUP - SPIKE DUPLICATE PHC - PETROLEUM HYDROCARBONS

DUP - DUPLICATE SP - SPIKE

DATES REFER TO WHEN BATCH WAS SHIUPPED AND WHEN SAMPLE WAS TAKEN.

<sup>\*</sup> INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

### TABLE L-6 (Continued) WATER INORGANIC VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE		******	ANALYTES	(mg/L)	VALIDITY
			••••••					***************************************
BATCH: 1301			5/11/88	ALK	COD	FLUORIDE	PHC	ALL VALID EXCEPT AS LISTED
01-503-W202			5/10/88		18	0.6	1.7	
04-512-W202	130196	EB	5/10/88	300		0.5	1.1	
				1500	90	3	8.5	VALID VALUES
01-501-W002		I	5/10/88	680		0.3	1.6	NOT VALID
01-502-W002		I	5/10/88	390	60	0.2		NOT VALID
01-503-W002			5/10/88	290		0.2	1.5	NOT VALID
01-503-W102		DUP	5/10/88	310		0.2	1.3	NOT VALID
01-504-W002		1	5/10/88	300	31	0.2	1.4	NOT VALID
01-504-W602		SP DUP	5/10/88	300	29	0.2	1.6	NOT VALID
01-505-W002		1	5/10/88	260	32*	0.3	1.5	NOT VALID
02-507-W002		I	5/10/88			1.6	1.9	NOT VALID
02-508-W002	130190	I	5/10/88			0.2	1.6	NOT VALID
02-509-W002		I	5/10/88			0.1	1.3	NOT VALID
04-510-W002		1	5/10/88			0.2	1.2	NOT VALID
04-511-W002	130193	I	5/10/88			0.2	1.1	NOT VALID
04-512-W002	130194	I	5/10/88			0.3	1.3	NOT VALID
04-512-W102	130195	DUP	5/10/88			0.2	1.4	NOT VALID
04-513-W002	130198	I	5/10/88			0.3	2.1	NOT VALID
05-514-W002	130199	I	5/10/88	480		0.1	1.5	NOT VALID
05-515-W002	130200	I	5/10/88	360		0.5	1.3*	NOT VALID
05-516-W002		I	5/10/88	130	72*	0.9	1.3*	NOT VALID
05-516-W602	130203	SP DUP	5/10/88	120	64*	0.9	2.0*	NOT VALID
05-517-W002	130204	. 1	5/10/88	280	39	0.4	1.9*	NOT VALID
05-518-W002	130205	1	5/10/88	170	37	1	1.5*	NOT VALID
06-519-W002	130206	1	5/10/88	310	80	0.5	1.8*	NOT VALID
06-520-W002	130207	1	5/10/88	210		0.3	1.9*	NOT VALID
07-521-W002	130208	1	5/10/88			0.7	1.4*	NOT VALID
07-522-W002	130209	I	5/10/88			0.8	1.6*	NOT VALID
07-523-W002	130210	1	5/10/88			0.3	2.0*	NOT VALID
07-524-W002	130211		5/10/88			0.3	2.0*	NOT VALID

I - INVESTIGATIVE

ALK - ALKALINITY

COD - CHEMICAL OXYGEN DEMAND

TOC - TOTAL OXYGEN CARBON

TDS - TOTAL DISSOLVED SOLIDS SP DUP - SPIKE DUPLICATE PHC - PETROLEUM HYDROCARBONS

DUP - DUPLICATE

SP - SPIKE

DATES REFER TO WHEN BATCH WAS SHIUPPED AND WHEN SAMPLE WAS TAKEN.

EB - EQUIPMENT BLANK

MB - METHOD BLANK

SP MP - METHOD SPIKE

<sup>\*</sup> INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

### TABLE L-7 WATER CHLORIDE, PHOSPHATE, SULFATE VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

NUMBER	RFW NUMBER	TYPE	DATE	CHLORIDE	ANALYTES (mg/ PHOSPHATE	SULFATE	VALIDITY	
BATCH: 8804-0			4/6/88				ALL VALID	
BATCH: 8804-0	33		4/6/88				ALL VALID	
BATCH: 8804-0			4/9/88					EXCEPT AS LISTED
06-144-M201	8804-053-012	EB	4/21/88			22.9		
							VALID VAL	JE
	8804-053-006						NOT VALID	
	8804-053-007						NOT VALID	
	8804-053-008						NOT VALID	
ATCH: 8804-0			4/10/88				ALL VALID	
BATCH: 8804-0			4/12/88				ALL VALID	
BATCH: 8804-1	13		4/13/88				ALL VALID	
BATCH: 8804-1			4/19/88	• • • • • • • • • • • • • • • • • • • •			ALL VALID	
BATCH: 8805-3			5/10/88				ALL VALID	
	59 TO 8806-761						ALL VALID	
05-167-M221	8806-760-004	TB	6/20/88				VALID VAL	ıE
- INVESTIGAT	TIVE		SP MP - 1	METHOD SPIK	F			

EB - EQUIPMENT BLANK MB - METHOD BLANK

SP MP - METHOD SPIKE SP DUP - SPIKE DUPLICATE

DUP - DUPLICATE SP - SPIKE

### TABLE L-8 WATER METAL VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER		DATE		ANAL	YTES (mg/	L)	VALIDITY
RATCH - 1276/5					1 DON		ZINC	ALL VALID EXCEPT AS LISTER
01-124-M201			4/0/00	0.354		0.426		ALL VALID EXCEPT AS LISTER
02-165-M201	127606	EB			0.043			
02 103 M201	127090	EB		2.32				VALID VALUES
01-122-M001	127645	1	4/29/88	2.32	0.445	2.13	0.07	
01-123-M001	127646	ī	4/29/88		0.066		0.015	NOT VALID
01-125-M001	127648	ī	4/29/88		0.131		0.013	NOT VALID
01-156-M001	127649		4/29/88		0.308		0.023	NOT VALID NOT VALID
01-162-M001	127650	ī	4/29/88					
01-122-M101		DUP	4/29/88		0.003		0.021	NOT VALID
01-160-M001	127651 127692	I	4/29/88		0.178		0.04	NOT VALID NOT VALID
	127693	1	4/29/88		0.178		0.021	
	127694	-	4/29/88					NOT VALID
02-165-M101		1	4/29/88		0.079		0.021	
02-166-M001	127695 127698	1	4/29/88		0.066			
03-116-M001	127699	I	4/29/88		0.066		0.027	NOT VALID
03-116-M601	127099	CD DIID	4/27/00				0.013	NOT VALID . NOT VALID
	127701		4/29/88		0.048			NOT VALID
********								
BATCH: 127703	- 127954		4/7/88	CALCIUM	IRON	SILICON	ZINC	ALL VALID EXCEPT AS LISTED
06-144-M201			4/29/88	0.337		1.16		
				1.68	0.265	5.8		VALID VALUES
03-118-M001	127703	I	4/29/88				0.021	NOT VALID
06-108-M001	127804	I	4/29/88		0.184		0.018	NOT VALID
06-109-M001	127805				0.069		0.011	
06-110-M001	127806	1	4/29/88		0.235			
06-110-M601	127808	SP DUP	4/29/88		0.211			NOT VALID
06-247-M001	127809	I	4/29/88				0.011	NOT VALID
06-144-M001	127861	I	4/29/88					NOT VALID
06-144-M101	127862	DUP	4/29/88					NOT VALID
06-245-M001	127862 127953	I	4/29/88				0.011	
BATCH: 128048	 -128175		4/12/88				• • • • • • • • • • • • •	ALL VALID
	LQI127958			0.615 3.075				VALID VALUE

I - INVESTIGATIVE

SP DUP - SPIKE DUPLICATE DUP - DUPLICATE SP - SPIKE

EB - EQUIPMENT BLANK

MB - METHOD BLANK

## TABLE L-8 (Continued) WATER METAL VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

	NUMBER	TYPE			ANALY	TES (mg/L	)		VALI	DITY	
BATCH: 128520	-128925			CALCIUM	IRON	ZINC			ALL	VALID EXCEPT A	S LISTED
08-127-M201	128522	EB	6/01/88	0.753		0.099					
				3.765		0.495			VALI	D VALUES	
08-127-M001	128520	I	6/01/88			0.042			NOT	VALID	
08-127-M101	128521	DUP	6/01/88			0.077			NOT	VALID	
08-129-M001	128523	I	6/01/88			0.024			NOT	VALID	
01-503-W201	128918	EB	4/29/88	0.354	0.055	0.011					
				1.77	0.275	0.055				D VALUES	
01-502-W001	128915	I	4/29/88			0.046			NOT	VALID	
01-503-W001	128916	I	4/29/88			0.02				VALID	
01-503-W101	128917	DUP	4/29/88			0.011			NOT	VALID	
01-504-W001	128920	I	4/29/88			0.011			NOT	VALID	
01-505-W001	128921	1	4/29/88		0.045				NOT	VALID	
2-508-2001	128924	I	4/29/88			0.013			NOT	VALID	
BATCH: 128933			4/21/88						ALL	VALID EXCEPT A	AS LISTE
05-130-M201	128935	EB	5/25/88	0.421 2.105	0:026 0:13		0.404 2.02		VALI	D VALUES	
01-503-W201	128918	EΒ	4/29/88	0.354		0.055		0.011			
				1.77		0.275		0.055			
05-514-W001	128937	I	5/25/88					0.015			
05-514-W001	128937	I	5/25/88					0.015			
05-514-W001	128937	DUP	5/25/88							VALID	
05-515-W001	128938	I	5/25/88							VALID	•
05-517-W001	128939	I	5/25/88					0.012			
	128940		5/25/88					0.021			
06-519-W001	128942	I	5/25/88					0.042	NOT	VALID	
BATCH: 129017	7-129061		4/21/88						ALL	VALID	
BATCH: 129017			4/21/88	•••••				•••••		VALID	

I - INVESTIGATIVE

SP DUP - SPIKE DUPLICATE

EB - EQUIPMENT BLANK

DUP - DUPLICATE

MB - METHOD BLANK

SP - SPIKE

## TABLE L-8 (Continued) WATER METAL VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD NUMBER	RFW Number	SAMPLE TYPE	DATE		ANALY	TES (mg/L)	VALIDITY
BATCH: 130178	3-130199	******	5/11/88	CALCIUM	COPPER	ZINC	ALL VALID EXCEPT AS LISTED
01-503-W202	130182	ĒВ	6/1/88	0.319		0.012	ALL VALID ENGLY AS EISTED
999MB1	LQC130178	MB	6/1/88		0.029	0.01	
				1.59	0.145	0.06	VALID VALUES
01-503-W002	130180	1	6/1/88		0.028		NOT VALID
01-503-W102	130181	DUP	6/1/88			0.056	NOT VALID .
01-504-W002	130184	I	6/1/88			0.014	NOT VALID -
01-504-W602	130186	DUP	6/1/88			0.016	NOT VALID
01-505-W002	130187	I	6/1/88			0.012	NOT VALID
02-507-W002	130188	I	6/1/88		0.043		NOT VALID
02-508-W002	130190	1	6/1/88			0.034	NOT VALID
02-509-W002	130191	I	6/1/88		0.028	0.013	NOT VALID
05-514-W002	130199	I .	6/1/88			0.017	NOT VALID
BATCH: 130200	)-130207		5/11/88	CALCIUM	ZINC	• • • • • • • • • • • • • • • • • • • •	ALL VALID EXCEPT AS LISTED
	130182	EB	6/1/88	0.319	0.012		ALL VALID EXCEPT AS LISTED
99MB1	LQC130178	MB	6/1/88	0.517	0.012		
		112	0, 1, 00	1.59	0.06		VALID VALUES
5-517-W002	130204	I	6/1/88	1.37	0.039		NOT VALUES
5-518-W002	130205	Ī	6/1/88		0.041		
6-519-W002	130206	i	6/1/88		0.044		NOT VALID NOT VALID

I - INVESTIGATIVE

SP DUP - SPIKE DUPLICATE

EB - EQUIPMENT BLANK

DUP - DUPLICATE

MB - METHOD BLANK

SP - SPIKE

## TABLE L-9 WATER RESAMPLE VALIDATION IRP STAGE 2 SELFRIDGE ANGB, MI

FIELD NUMBER	RFW Number	SAMPLE TYPE	DATE	ANALYTES	(mg/L)	VALIDITY
BATCH: 136800-	136844		8/03/88	PHC		ALL VALID EXCEPT AS LISTED
07-523-W222	136813	EB	8/10/88	2.2		
o. Jes Here	130013	-	0, 10,00	11		VALID VALUE
07-523-W022	136811	1	8/10/88	2.9		NOT VALID
07-523-W122	136812	DUP	8/10/88	2.3		NOT VALID
07-523-W622			8/10/88	2.2		NOT VALID
07-524-W022	136817	I	8/10/88	1.4		NOT VALID .
05-516-W022	136831	i	8/10/88	1.8		NOT VALID .
				2.6		NOT VALID
05-518-W022	136837 136838	i	8/10/88	1.9		NOT VALID
06-520-W022	136840	i	8/10/88	1.9		NOT VALID
						ALL VALUE EVECTOR AC LICES
BATCH: 136991-			8/05/88		NH4	ALL VALID EXCEPT AS LISTED
08-128-M221	137002		8/09/88	13		
05-105-M221	137015	EB	8/17/88	45	0.7	
				65	3.5	VALID VALUES
05-235-M021	137012	I	8/17/88		0.5	NOT VALID
05-105-M021	137013		8/17/88		1.3	NOT VALID
05-105-M121	137014	DUP	8/17/88		0.7	NOT VALID
01-125-M121	137183		8/17/88		0.7	NOT VALID
01-125-M621	137186		8/17/88		0.6	NOT VALID
01-122-M021	137187	I	8/17/88		0.8	NOT VALID
01-257-M021	137188		8/17/88		0.5	NOT VALID
RATCH: 137182-	137236		8/07/88	PHC	NH4	ALL VALID EXCEPT AS LISTED
01-125-M221	137184	EB	8/17/88		0.4	
07-241-M221	137234	EB	8/17/88	2.2		
				11	2	VALID VALUES
01-125-M021	137182	I	8/17/88		0.6	NOT VALID
01-261-M021	137190	I	8/17/88		1.4	NOT VALID
01-123-M021	137191	Ī	8/17/88		1	NOT VALID
01-162-M021	137192	I	8/17/88		0.7	NOT VALID
01-263-M021	137193	I	8/17/88		0.7	NOT VALID
01-124-M021	137194	I	8/17/88		0.4	NOT VALID
07-241-M621		SP DUP	8/10/88	2.1		NOT VALID
01-259-M021	137202		8/17/88		0.7	NOT VALID
01-158-M021	137203		8/17/88		1.7	NOT VALID
06-519-W022	137218	I	8/10/88	3.6		NOT VALID
07-241-M021	137232		8/10/88	2.2		NOT VALID
07-241-M121	137233	Ī	8/10/88	2.1		NOT VALID

I - INVESTIGATIVE SP MP - METHOD SPIKE
EB - EQUIPMENT BLANK SP DUP - SPIKE DUPLICATE
MB - METHOD BLANK PHC - PETROLEUM HYDROCARBONS
DUP - DUPLICATE TDS - TOTAL DISSOLVED SOLIDS
SP - SPIKE NH4 - AMMONIA



## APPENDIX M

### DOMESTIC WELL LOGS

SEP 1 8 1975	WATER N	WELL REG	E CONTROL OF ANTICETY
1 LOCATION OF WELL			PUBLIC HEALTH
Macomb Harrison		Fraction 14	Section Number Town Number Range Number 2N N/S. Range Number
Distance And Direction from Road Intersections 145 ft. NE from center of st @ 39706 Cove St. Dr  Street address & City of Well Location Locate with 'X' in section below  State			Joseph & Kathleen Simmons Address 39706 Cove Street Dr. Nt. Clemens
Sketch Sketch	h Map:		4 WELL DEPTH: (completed) Date of Completion  60 ft. 6 - 13 - 75.  5 Cable tool
MI.			Irrigation
2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	4 in. toft. Depth   Weight 11   Ibs./ft.  in. toft. Depth   Drive Shoe? Yes ▼ No
Yellow Clay & Sand Mixed	3	3	8 SCREEN:  Type: Stainless Sl. Dia.: 3 TD
Gray Clay	55	58	Slot 'Gauze 15 Length 31t Set between 58 ft. and 60 ft.
Gray Coarse Sand Water Bg.	2	60 .	Fittings:  9 STATIC WATER LEVEL
			10 PUMPING LEVEL below land surface
			ft. afterhrs. pumping g.p.m.
·		`	ft. after hrs. pumping g.p.m.  11 WATER QUALITY in Parts Per Million;
			Iron (Fe) Chlorides (CI)
			HardnessOther
			12 WELL HEAD COMPLETION: In Approved Pit
			Pitless Adapter 12" Above Grade  13 Well Grouted? Yes No
			Neat Cement Bentonite
·			Depth: Fromft. toft.
			14 Nearest Source of possible contamination  100 feet S Direction Septic & Fd. Type
			Well disinfected upon completion X Yes No
•			15 PUMP: Not installed  Manufacturer's Name Red Jacket
			Model Number R33NO-6BC HP = Volts 115
			Length of Drop Pipeft. capacityG.P.M.  Type: 🖅 Submersible
·			Jet Reciprocating
USE A ZNO SHEET IF NEEDED			
16 Remarks, elevation, source of data, etc.		17 WATER V	VELL CONTRACTOR'S CERTIFICATION:
ALUED INFO BY DRILLER, ITEM NO. *CORRECTED BY ************************************	1	This well to the be Sch	was drilled under my jurisdiction and this report is true st of my knowledge and belief.  APP Well Drilling 0163 ITEREO BUSINESS NAME REGISTRATION NO.
- ELEVATION		Address	33071 Carciald Rd. Fraser
UEPTH TO ROCK			

D67d

100M (Rev. 12-68)

	·			
		WATER V		Olivani dei nittietti
1 LOCATION OF WELL	HERRI.	SUNJ 29		PARCEL 134 PUBLIC HEALTH
County	ownship Name		Fraction	Section Number   Town Number   Range Number
MACOMB Distance And Direction from Road In	CLASS	DIV	14 /	VE.SE 2 N.R. 14 EX
Distance And Direction from Road In	itersections	35-M	1	JOHN CONNOR
39816 5 YLU		J, U .		Address = Off SV/U/A
37872 3 5 20	WIT	0151	rale	Address 398/6 5860/A
Street address & City of Well Locati	on /-/// Sketc	n Man:	EMJ.	4 WELL DEPTH: (completed) Date of Completion MIC
F	^			50 11. 6-27-69
	<b>☆</b> .			5 Cable tool Rotary Driven Dug
	K	پسید		Hollow rod Jetted Bared
*	NO DUL	RIA		6 USE: Domestic Public Supply Industry
│	DUL	74		☐ Irrigation ☐ Air Conditioning ☐ Commercial
B	-			Test Well
1 MILE				7 CASING: Threaded Welded Height: Above/Below Surface tt.
		THICTHESS	0EPTH T0	4 in. to 50 ft. Depth Weight 11 lbs./ft.
2 FORMATION		OF STRATUM	STRATUM	in. toft. Depth   Drive Shoe? Yes X No
New SALL		1 -	10	8 SCREEN:
# JANd		12	12	Type: _ COOK _ Dia.: _ 3 1 N.
CLAY		120	40	Type: <u>600/5</u> Dia.: <u>3 / N.</u> Slot 2. Length 4 FT
CZAI		128	40	Set between 45 ft. and 50 ft.
HARd		2	46	Fittings:
	d.		•	9 STATIC WATER LEVEL
SAND X	YRAVEL	4	5-0	ft. below land surface
				10 PUMPING LEVEL below land surface
				20 ft. after 2 hrs. pumping 8 g.p.m.
WELL FIN	15151			
	3760			ft. after hrs. pumping g.p.m.  11 WATER QUALITY in Parts Per Million:
AT 50 FT				fron (Fe) Chlorides (CI)
				HardnessOther
				12 WELL HEAD COMPLETION: In Approved Pit
·				Pitless Adapter 12" Above Grade
				13 Well Grouted? Yes No Neat Cament Bentonite
				Death: Fromft. toft.
1				114 Names Francisco de Caracita de Caracit
				60 feet Direction WEST OF WELL
				Well disinfected upon completion X Yes No
				Not installed
				Manufacturer's Name
				Model Number HP Volts Length of Drop Pipe ft. capacity G.P.M.
				Type: Submersible
				Jet Reciprocating
16 Remarks, elevation, source o			17 144755	WELL CONTRACTOR'S CERTIFICATION:
			This wel	WELL CONTRACTOR'S CERTIFICATION:  I was drilled under my jurisdiction and this report is true
.0-	er er allen være og e			est of my knowledge and hanele
the same	. 2			, 1
	5		Address	30277 CARL ST N.H.
44 (4.8)	1			5 5 6 11 15-110
			Signed_	Waren Belt Date 6/27/69
D67d 100M (Rev. 12-68)				TWITTEN OUT TO A STATE TO THE STATE OF THE S

राज्या पर खटन यह प्रश्रम्		,	
	WATED	WELL RE	
1 LOCATION OF WELL	ACT 2	94 PA 19	OF OF
County Township Name		Fraction	Section Number   Town Number   Range Number
Macomb Harriso  Distance And Direction from Road Intersections	n	IVE:1	NE. 1104 633 2N N'S 14E E/W
35 ft. n. of center of ros	ıd		3 OWNER OF WELL:  Carl Johnson
@ 26655 Ashland St			Address 26655 Ashland St
Street address & City of Well Location  Locate with "X" in Section below. Shatel			Mt. Clem. 48043
Sketch	h Mao:		4 WELL DEPTH: (completed) Date of Completion 75 ft. 9 - 11 - 73.
<b>│</b>			5 Di Capita tost
w			Hollow rod Jetted Bored
			6 USE: X Domestic Public Supply Industry
			☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			7 CASING: Threaded Welded Height: Above/8777
2 FORMATION	TCKNESS	0E=TH T0	Surfaceft.
- PONVATION	GF STRATUM	BOTTOM OF STRATUM	in. toft. Depth   Drive Shoe? Yes T No
Yellow Fine Sand	5	5	8 SCREEN:
C G3	-		Type: Johnson S. Steel 4" Slavelar 18 Length 3 ft.
Gray Clay	37	42	Stat/GMTX 18 Long th 3 ft.  Set between 72 ft. and 75 ft.
Gray Dry Clay & Stoney	25	67	Fittings:
Gray Mixed Stones W. Brg.	8	75	9 STATIC WATER LEVEL  16 ft. below land surface
Gray Clay	7	?	10 PUMPING LEVEL below land surface
			ft. afterhrs. pumping27_ g.p.m.
			ft. after hrs. pumping g.o.m.
			11 WATER QUALITY in Parts Per Million:
			Iron (Fe) Chlorides (C1)
			HardnessOther
			12 WELL HEAD COMPLETION: In Approved Pit
			Pitless Adapter 12" Above Grade  13 Well Grouted? Yes No
			Neat Cement Bentonite
•		}	Denth: Fromft. toft.  14 Nearest Source of possible contamination
			55 feet N Direction Sentic & Fd Type
			Well disinfected upon completion Yes No
			Manufacturer's Name Red Jacket
			Model Number R 33NO-6BC HP1/30its 115
			Length of Drop Pipeft. capacityG.P.M.
			Type: X Submersible  Det Reciprocation
			Jet Reciprocating
6 Remarks, elevation, source of data, etc.		17 V. AT=9 W	ELL CONTRACTOR'S CERTIFICATION:
		This well	t of my knowledge and belief.
ADDED INTO BY DEILLER THEM NO.			cheer Well Drilling 0163 ERED BUSINESS NAME REGISTRATION NO.
+ i julia d¥			33071 Carfield Rd. Fraser
ELECTION  DEPTH TO ROCK		- (	
067d 100% (Rev. 12-68)		5:an-	Tree 17 Leer Date 1973

76		
1 LOCATION OF WELL	WATER WELL	RECORD MICHIGAN DEPARTMENT OF PUBLIC HEALTH
County Township Name	151	PUBLIC HEALTH
MACOMB HARRISO. Distance And Direction from Road Intersections	y 5	Sedilon Number Town Number Range Number 2 N/S /H EM
Distance And Direction from Road Intersections 305' 5 of N RIVER MAP WOOD	RO 9	AR. S. HOLMES Address HOJJ8 MAP WOOD
Street address & City of Well Location SAME		MT. CLEMENS, MICH
Locate with "X" in section below Ski	etch Mao:	4 WELL DEPTH: (completed) Date of Completion
		144 11. 7-10-24
<b> </b>		5 Cable tool Rotary Driven Dug
I *		Hollow red Jetted Bored
		6 USE: Domestic Public Supply Industry
; M1.		Irrigation Air Conditioning Commercial
		7 CASING: Threaded Welded Height: Above/Betow
1 M LE	•	Diam. Surface
2 FORMATION	THICTNESS DEPT	H TO H FULL FULL
	STRATUM STRA	TUMin. toft. Depth   Drive Shoe? Yes \ No
SAKOY CLAY	12' 12	8 SCREEN:
· · · · · · · · · · · · · · · · · · ·	12 10	Ula:
RIVER BED MUDDY	31 20	Slot/Gauze Length
		Set betweenft. andft.
CKAY	32' 47	
HAPA CLAY & STANIE		9 STATIC WATER LEVEL
HARD CLAY & STONES	16' 63	
HARD SANDY CLAY	28191	10 PUMPING LEVEL below land surface
		g.p.m.
CLAY	10' 101	ft. after hrs. pumping g.p.m.
C.P. Lin		11 WATER QUALITY in Parts Per Million:
BROKEN ROCK & CLAY	1 102	/ Iron (Fe) Chlorides (CI)
SLATE BED ROCK	H2' 1H 2	4
	7/5 177 6	12 WELL HEAD COMPLETION: In Approved Pit
		Pitless Adapter 12" Above Grade
		13 Well Grouted? Yes No
-		Neat Cement Bentonite
		Denth: From ft. to ft.
		14 Nearest Source of possible contamination  75 reet NE Direction SEPTIC Type
		Well disinfected upon completion XYes No
		15 PUMP: Not installed
		Manufacturer's Name RED VACKET
•		Model Number R50NI 9RH 2 Volts 230
		Length of Drop Pipe 154 ft. capacity 10 G.P.M.
•		Type: Submersible
	1	Jet Reciprocating
.3E ± 250 SMEET IF NEEDED		
16 Remarks, elevation, source of data, etc. ACCED 1970 BY 1971 TIEM 110.	17 WA1	TER WELL CONTRACTOR'S CERTIFICATION:
- · · · · · · · · · · · · · · · · · · ·	1 10 17	well was drilled under my jurisdiction and this report is true the best of my knowledge and belief.
··	R.A	WIFRAND WELL DRILLING 0020 REGISTERES BUSINESS NAME REGISTRATION NO.
EE ALL		
TO ROCK	Addi	ed Parage Date 7-10-24
11.60	Sign	ed 1 9 Freque & Dais 7-10-24 -
067d 10.15 Fev. 12-58		AUTHOR ZED REPRESEN ATIVE

GEOLOGICAL SURVEY SAMPLE No.				
SEP 18 (975		WATER	WELL RE	CORD
1 LOCATION OF WELL		ACT 25		
County	ownship Name		Fraction	Section Number   Town Number   Range Number
Macomb  Distance And Direction from Road In	Harrison	3		NE 1 207 2N N/S. 14E E/W.
85 ft. NE from		ad		3 OWNER OF WELL:  Joseph W. Simmons
	Cove Drive.			Address 39706 Cove Drive
Street address & City of Well Locati				Mt. Clemens, Mich
Counte with X in Section helds	Sketch	n Map:		4 WELL DEPTH: (completed) Date of Completion 129 1. 4 - 1 - 75
	DRY-HOL	Æ		5 00
				Hollow rod Jetted Borod
				6 USE: Domestic Public Supply Industry
				Irrigation   Air Conditioning   Commercial
				7 CASING: Threaded Welded Height: Above/Below
1 MILE		THICKNESS	DEPTH TO	Surfaceft.
2 FORMATION		OF STRATUM	BOTTOM OF	in. toft. Depth   Weightlbs./ftin. toft. Depth   Drive Shoe? Yes No
Yellow Clay &	Sand Wiw	3	3	8 SCREEN:
Tollow Olay &	Dand Mis.	)	3	Type: Dia,:
Gray Clay		89	92	Slot/Gauze Length
Black Slate		?	129	Set betweenft. andft. Fittings:
22402 32400		•	127	9 STATIC WATER LEVEL
( DRY-HOLE )				ft. below land surface
				10 PUMPING LEVEL below land surface
				ft, after hrs. pumping g.p.m.
				ft. after hrs. pumping g.p.m.
				11 WATER QUALITY in Parts Per Million:
				Iron (Fe) Chlorides (CI)
				HardnessOther
				12 WELL HEAD COMPLETION: In Approved Pit
	<u> </u>			Pitless Adapter 12" Above Grade
				Neat Cement Bentonite
,				Depth: Fromtt. toft.
				14 Nearest Source of possible contaminationfeet DirectionType
				Well disinfected upon completion Yes No
				15 PUMP: Not installed
				Manufacturer's Name
				Model Number HP Volts Length of Drop Pipe ft. capacity G.P.M.
				Type: Submersible
		-	,	☐ Jet ☐ Reciprocating
USE A 2ND SHEET IF N				·
16 Remarks, elevation, source of	data. etc. Y DRILLER, ITEM NO.		17 WATER V	VELL CONTRACTOR'S CERTIFICATION: was drilled under my jurisdiction and this report is true
G GELCHANT	)		to the be	st of my knowledge and belief.
· · ALIGITION B	Y ,		- SC	tered Business NAME REGISTRATION NO.
LEVATION TO THE PROPERTY A	cx g	<b>§</b>	Address	33071 Capfield Rd. Fraser
UEFTH TO RO	un 'a'			
D474 100M 18 12.50			2.0 Cc -	Date 1975

	ACT 294	PA 1965	MICHIGAN DEPARTMENT
1 LOCATION OF WELL			PUBLIC HEALTH
County Twp.		Fraction	Section No.   Town
Distance And Direction from Rand Intersections		11:20	12 1/2 1/4 EX
Ho T 2 T 10 A 10 O	WHER No		3 OWNER OF WELL: COLEMAN FLYNN
1100 GU TAP WOUD			COLEMAN FLYNN
Street address & City of Well Location			Address 40505 4AP WOOD
	T		MT, CHEMENS MICH
2 FORMATION	THICKHESS OF STRATUM	DEPTH TO BOTTOM OF	4 WELL DEPTH: (completed) Date of Completion = 130' C' ft. 10-19-61
	STRATUM	STRATUM	130 6 11. 10-19-66
- 1 A X	46	46	5 Cable tool Rotary Driven Dug
CFAI	70	1/6	Hollow rod Jetted Bored
HARD CLAY & STONES.	10	561	6 USE: Domestic Public Supply Industry
		,	☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ☐
LEAKY HARD PAN	40'	96	7 CASING: TI LIPATION
BLACK CLAY & PIECES OF SLATE	26	198-6	Weight // lbs/ft.
	1 .	-	in. toft Death : Daine Share
BLACK SLATE ROCK	32'	1306	8 SCREEN:
			Type: NONE Dia.:
			Slot/GauzeLength
			Set betweenft. andft.
			Fittings:
			0
			9 STATIC WATER LEVEL
			10 PUMPING LEYEL below land surface
			1
			ft. after_hrs. pumping/7_g.p.m.
			ft. afterhrs. pumpingg.p.m.
			11 WATER QUALITY in Parts Per Million:
			Iron (Fe)Chlorides (CI)
			Hardness
			12 WELL HEAD COMPLETION: In Approved Pit
			Pitless Adapter 12" Above Grade
•			Well Grouted? Yes No
			Material: Neat Coment
			Depth: Fromft. toft.
			14 SANITARY:
			Nearest Source of possible contamination
			Direction Type
			Well disinfected upon completion Yes No
		ľ	15 PUMP:
			Manufacturer's Name RED JACKET
•			Model Number 33 5 J HP 1/5
• .			Length of Drop Pipe/
			Jet Reciprocating
6 Remarks, elevation, source of data, etc.		17 WATER W	FELL CONTRACTOR'S CERTIFICATION:
		This well	was drilled under my jurisdiction and this report is true
		to the bes	of my knowledge and belief.
	-	Kerf-	5157 CER AUGUST -0 C 20
		7	AEGISTRATION NO.
		Address	30 HO TALOMINO WARPEN, 19
•	İ	Signed	Date 10-17-11
		, A)	MAORIZED REPRESENTATIVE

	WATER	WELL RE	CORD MICHIGAN DEPARTMENT
1 LOCATION OF WELL County Township Name		IIF	
Macomb Harrison	n	Fraction SW. 14	Sux 14 Section Number Town Number 2N N/S. Range Number 14E E/W.
Distance And Direction from Road Intersections 110ft. S. of center of	street		3 OWNER OF WELL:
@ 27020 N. River	r Rd.	' :	Richard Zitka
Street address & City of Well 150ft. W. of M	aplewo	od St.	Address 27020 N. River Rd. Mt. Clemens, 48043
Louisian and Marie and American	h Map:		4 WELL DEPTH: (completed) Date of Completion
			102 ft. 7-29-74
			S X Cable and
[ w			Hollow rod Jetted Rored
			D USE:   ☐ Domestic
			☐ Irrigation ☐ Air Conditioning ☐ Commercial
			Test Well 7
1 MILE			7 CASING: Threaded X Welded Height: Above/870707 ft.
2 FORMATION	THICKNESS	DEPTH TO	lin. to 100tt. Depth   Weight 11 lbs./ft.
	STRATUM	STRATUM	in. toft. Depth   Drive Shoe? yes This
Yellow Clay	3	3	8 SCREEN:
	<del>                                     </del>		Type: Stainless Std. 3" ID
Yellow Fine Sand & Clay	7	10	Slot/GXXX 25 Length 3ft
Cross Glass			Set between 100k. and 102ft.
Gray Clay	33	43	
Gray Clay & Mix. Stones.	57	100	9 STATIC WATER LEVEL .
·		100	20 ft. below land surface 10 PUMPING LEVEL below land surface
Gray Coaese Sand W. Brg.	2	102	ft. after hrs. pumping g.p.m.
Cma= 03 a=			g.p.m.
Gray Clay	?	?	ft. after hrs. pumping g.p.m.
			11 WATER QUALITY in Parts Per Million:
			Iron (Fe) Chlorides (CI)
			HardnessOther
•			12 WELL HEAD COMPLETION:   In Approved Pit
			Pitless Adapter   12" Above Grade
			13 Well Grouted? Yes No
			Neat Cement Bentonite
		ŀ	Depth: Fromft. toft.  14 Nearest Source of possible contamination
			52 feet N. Direction San. Sewer Type
			Well disinfected upon completion Yes No
		ł	15 PUMP: Q Not installed
			Manufacturer's Name
			Model Number HP Volts
			Length of Drop Pipe
			Jet Reciprocating
USZ A 2ND SMEET IF NEEDED			
16 Remarks, elevation, source of data, etc.		17 WATER 14	ELL CONTRACTOR'S CERTIFICATION:
		This well	was drilled under my surjection and the second in a
7. 10 mg		to the nez	t or my knowledge and belief.
		नक्षा	CAR BUSINESS NAME 1111ng CHECKS PRATION NO.
		Address _	33071 Garfield Rd Ro
· •		_	33071 Garfield Rd. Fraser
D67d 100M (Rev. 12-68)		Signed	UTHORIZED REPRESENTATIVE (F) Date

SESESSIONE SUNTER SAMPLE NO. ) JUN 19 1972 WATER WELL RECORD MICHIGAN DEPARTMENT PA 1965 SE SW SW LOCATION OF WELL OF PUBLIC HEALTH Fraction Section Number | Town Number CHESTERFICLD Range Number Macomb Harrison SH SW SE V 31 TWZ. LLE Distance And Direction from Road Intersections E/W 3 OWNER OF WELL: 168 ft N. of center of road c 25475 Rosso Huy. Ray Shee Address . 25475 Rosse Buy. Street address & City of Well Location Mt. Clemens. Locate with "X" in section below Sketch Man 4 WELL DEPTH: (completed) Date of Completion 28 3 - 27 - 72 Cable tool Rotary Driven Oug Hollow rod Jetted Bored 6 USE: X Domestic Public Supply Industry ☐ Irrigation Air Conditioning Commercial Test Well Rosso Hyy. 7 CASING: Threaded 🔼 Welded 🗌 Height: Above/8 👫 Surface \_\_\_\_\_1 ft. THICKNESS CEPTH TO BOTTOM OF 25 in. to 25\_ft. Depth **FORMATION** Weight \_\_\_\_ ibs./ft. STRATUM STRATUM in. to \_ft. Depth | Drive Shoe? Yes X No 8 SCREEN: Gray Clay 18 18 Type: Stainless Steel Dia.: Slot/#35 \_\_\_\_ Length \_\_ 3ft\_ Gray Med. Cand. Water Brg 10 28 Set between 25 ft. and 28 ft. Fittings: Gray Clay & Mixed Stones 9 STATIC WATER LEVEL ft. below land surface 10 PUMPING LEVEL below land surface ft. after hrs. pumping \_\_\_ ft. after \_\_\_ hrs. pumping \_ 11 WATER QUALITY in Parts Per Million: Iron (Fe) \_\_\_\_\_ Chlorides (CI) Hardness \_ 12 WELL HEAD COMPLETION: In Approved Pit Pitless Adapter 2 12" Above Grade 13 Well Grouted? Yes No ☐ Neat Cement ☐ Bentonite ☐ Depth: From\_\_\_\_ \_ft. to \_\_\_ 14 Nearest Source of possible contamination 100 feet S Direction Septic & T. Fd. Type Well disinfected upon completion 🗷 Yes 🔲 No 15 PUMP: Not installed Manufacturer's Name \_ Model Number\_ HP \_\_\_\_ Voits Length of Drop Pipe\_\_\_ \_ft. capacity \_\_\_\_ G.P.M. Type: Submersible TION CO ☐ Jet Reciprocating USE A 2NO SHEET IF NEEDED 16 Remarks, elevation, source of data, etc. 17 WATER WELL CONTRACTOR'S CERTIFICATION:

GEOLOGICAL SURVEY COPY

This well was drilled under my jurisdiction and this report is true

ALLISTRATION NO.

to the best of my knowledge and belief.

Scheet Well Drilling

33071 Gapfield Rd.

To be used for lawn springling.

100M (Rev. 12-68)

D67d .



### APPENDIX N

HISTOGRAMS OF ANALYSES FOR SOIL SAMPLES

TABLE N-1
SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA
IRP STAGE 2

SELFRIDGE	ANGB,	MICHIGAN
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ALUMINUM	ARSENIC	BORON	BARIUM	BERYLLIUM
	Sample mg/kg	Sample mg/kg	Sample mg/kg	Sample mg/kg
8 4278001 2260 1 357M001 2690 3 4198001 2930 5 4028003 3530 5 4018003 3670 5 4178003 4080 5 4048003 4440 5 4058103 5510 5 4058103 5550 8 4258001 5490 5 4218003 5540 8 4258001 8330 5 4038001 8330 5 4038001 8330 5 4038001 8330 5 4038001 8330 5 4038001 8330 5 4038001 8330 5 4038001 8330 5 4038001 8330 5 4038001 830 2 4238001 9400 8 4258002 10800 2 4248002 10800 2 4248003 11800 3 4198003 11000 2 4248002 11500 3 4188001 11600 2 4248002 12300 5 4018001 11800 8 4268003 12600 3 4188101 12900 5 4048002 12300 5 4048002 12300 5 4048002 12300 5 4048002 12300 5 4048002 12300 5 4048002 12300 5 4048001 13100 2 4228002 13300 5 4048001 13100 2 4238002 12300 5 4048002 12300 5 4048003 12600 3 4188101 12900 3 4198002 13000 5 4048001 13100 2 4238002 13500 5 4048001 13100 2 4238002 13500 5 4048001 13500 5 4048001 13500 5 4048001 13500 5 4048003 15500 5 4028003 15500 5 4028003 15500 5 4028003 15500 5 4028001 15800 5 4028001 15800 5 4028001 15800 5 4028001 15800 5 4028001 15800 5 4028003 15300 5 4028001 15800 5 4028001 15800 5 4028001 15800 5 4028002 14500 2 4228003 15000 5 4058001 15200 5 4218002 14500 2 4238003 15800 5 4058001 15200 5 4058001 15200 6 347M001 16000 6 347M001 18200 6 347M001 18200 6 347M001 19700	5 4168001 17.2 5 4018003 17.9	5 421B002 27.7		
11177.58 4370.344 19099915	15.81216 8.185645 67.00678	26.82424 5.741028	86.19354 36.15372	0.717368 0.231967
[] 277071	67.00478	32.95941	1307.091	0.053808

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

## TABLE N-1 (Continued) SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

CALCIUM	CADMIUM ·	COBALT	CHROMIUM	COPPER
Sample mg/kg	Sample mg/kg	Sample mg/kg	Sample mg/kg	Sample mg/kg
3 4198001 948 2 4238101 2400 2 4238001 2570 2 4248001 3190 2 4228001 3300 5 4218001 5240 3 4188001 8950 5 4018001 9000 5 4028001 10800 8 4268001 11900 8 4278001 20300 1 357M001 21600 3 4208002 24200 3 4208002 24200 3 4208001 32100 2 4228002 30500 8 4278003 31800 8 4278003 31800 8 4278001 32900 8 4278003 33200 3 4188101 32800 1 359M001 32900 8 4278002 33500 8 4278002 33500 8 4278002 33500 5 4188002 33700 5 4038101 35500 8 4278002 36900 6 347M001 37300 5 4028002 37400 2 4248002 37700 3 4188002 33700 5 4028002 41700 5 416801 40700 6 345M001 55000 6 4048002 47700 5 4048002 57700 2 4228003 60300 8 4258003 60300 8 4258003 60300 8 4258003 61500 5 4018003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500 5 4038003 61500	5 403B101 5 404B002 3 418B001 8 425B003 3 418B101 5 421B002 2 424B001 5 401B001 5 401B001 5 402B002 8 427B002 5 417B002 1 357M001 2 420B003 8 425B001 5 416B003 8 426B001 5 421B001 5 401B003 8 427B001 5 401B003 8 427B001 5 401B003 8 427B001 5 401B003 5 403B001 3 419B001 5 405B001 5 405B001 5 405B001 5 405B001 1 422B001 5 405B001 1 3 419B001 5 405B001 1 3 419B001 5 405B001 1 3 419B001 5 405B001 1 3 419B001 5 405B001 1 1 363B003 1 1 363B003 1 1 363B001 1 1 3 443B002 1 1 3 443B02 1 1 3 443B02 1 1 3 443B02 1 1 3 443B02 1 1 3	3 4198001 1 357M001 5 4028003 5 4018003 8 4278001 5 4178003 4 4258001 5 4178003 4 4258001 4 4258001 5 4058103 5 4208001 5 4208001 5 4218003 5 4218003 5 4238101 5 4038001 5 4038001 6 4228001 7 11 5 4038001 7 22 6 4238101 7 34038001 7 34188001 7 34188001 7 3428002 7 34188003 7 3428002 7 34188003 7 3428003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 3438003 7 34388003 7 3438003	5 4028003 5.47 8 4278001 5.68 3 4198001 5.68 1 357M001 6.06 5 4178003 7.9 5 4018003 8.2 5 4058003 8.3 5 4048003 8.42 5 4218003 8.6 8 4258001 9.3 5 4058002 10.4 5 4058103 10.5 5 4058002 10.4 5 4058103 11.6 5 4038101 13.9 2 4238001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268001 15.3 8 4268002 18.7 2 4288002 18.5 2 4228001 18.6 2 4228002 18.7 2 4248002 18.7 2 4248002 18.7 2 4248002 18.7 2 4248002 18.7 2 4248002 18.7 2 4248002 18.7 2 4248002 18.7 2 4248002 18.9 3 4188101 19.9 5 4068002 20.8 5 4048001 20.9 5 4058001 20.9 5 4058001 2	8 4278001 3.7 3 4198001 4.43 2 4238001 5 5 4058003 6.2 5 4048003 6.9 8 4258001 6.9 8 4258001 7.7 5 4058003 7.7 5 4168003 7.7 5 4168003 7.7 5 4168003 8.7 2 4238101 8.5 5 4218003 8.7 2 4228001 10.7 5 4038003 11.2 2 4228001 12.3 8 4268001 12.3 8 4268001 12.3 8 4278003 17.7 5 4168002 17.8 8 4278003 17.7 5 4168002 17.8 8 4278003 17.7 5 4168002 17.8 8 4278003 18.5 5 4038001 19.7 6 3478002 18.7 3 4188001 19.7 6 3458001 20.3 8 4258002 20.5 8 4268003 20.6 5 4018001 20.7 3 4188002 21.4 2 4228003 21.4 2 4228003 21.4 2 4228003 22.5 3 4188101 22.5 2 4248003 22.1 3 4188101 22.5 2 4248003 22.1 3 4188001 24.7 3 4288002 21.6 5 4018002 21.6 5 4018002 21.6 5 4018001 24.7 5 4028001 34.2
21515.71	5.352602	3.686242	6.365576	7.322138
4.6E+08	28.65035	13.58838	40.52056	53.61371

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

## TABLE N-1 (Continued) SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

IRON	MERCURY Sample mg/kg	POTASSIUM	MAGNESIUM Sample mg/kg	MANGANESE
3 / 100001 7/50	Sample mg/kg	Sample mg/kg		
\$\text{Sample} \text{mg/kg}\$  3 \tag{4198001} \text{3650}\$  8 \tag{278001} \text{3800}\$  1 \text{3574001} \text{5350}\$  5 \tag{4028003} \text{8880}\$  5 \tag{4018003} \text{9950}\$  8 \tag{258001} \text{9430}\$  5 \tag{4048003} \text{9970}\$  5 \tag{4058003} \text{10400}\$  5 \tag{4178003} \text{10700}\$  5 \tag{4058003} \text{10400}\$  5 \tag{4168003} \text{11700}\$  5 \tag{4058002} \text{12400}\$  2 \tag{4238001} \text{12600}\$  5 \tag{4018001} \text{12600}\$  5 \tag{4028001} \text{15700}\$  2 \tag{228001} \text{15600}\$  5 \tag{4028001} \text{15700}\$  2 \tag{228001} \text{15600}\$  5 \tag{4028001} \text{17300}\$  2 \tag{2428001} \text{17300}\$  2 \tag{2428001} \text{17300}\$  2 \tag{2428001} \text{19800}\$  5 \tag{4188001} \text{21100}\$  2 \tag{2428001} \text{2900}\$  3 \tag{4188001} \text{21100}\$  2 \tag{2428002} \text{23000}\$  5 \tag{4168102} \text{22800}\$  2 \tag{2428002} \text{23000}\$  5 \tag{4168002} \text{23200}\$  5 \tag{4048002} \text{23300}\$  5 \tag{4168002} \text{23300}\$  5 \tag{4028002} \text{23200}\$  5 \tag{4048002} \text{23300}\$  5 \tag{4048002} \text{23300}\$  8 \tag{258003} \text{24000}\$  3 \tag{4188002} \text{24000}\$  3 \tag{4188002} \text{24000}\$  3 \tag{4188002} \text{24000}\$  3 \tag{4188002} \text{24000}\$  3 \tag{4188002} \text{24000}\$  3 \tag{4188003} \text{24500}\$  2 \tag{238003} \text{24500}\$  3 \tag{4188001} \text{25500}\$  3 \tag{4188002} \text{26000}\$  5 \tag{404003} \text{26000}\$  5 \tag{404003} \text{26000}\$  5 \tag{404003} \text{26000}\$  5 \tag{404003} \text{26000}\$  5 \tag{404003} \text{26000}\$  5 \tag{404003} \text{26000}\$  5 \tag{404000} \text{26000}\$  5 \tag{404000} 2600	8 4258001 8 4258002 8 4258003 8 4268001 8 4268002 8 4268003 8 4278001 8 4278002 8 4278003	2 423B101 5 401B003 1 357M001 8 425B001 8 425B001 5 417B003 5 402B003 2 423B001 5 403B101 5 403B101 5 404B003 5 401B001 3 427B001 3 419B001 2 424B001 3 419B001 2 424B001 3 419B001 2 422B001 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B103 5 405B002 6 422B001 6 403B001 6 425B002 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B01 6 405B00	3 4198001 709 2 4238001 2490 2 4248001 2870 2 4238101 2980 2 4228001 3350 8 4258001 3550 5 4018001 3720 5 4028001 4710 8 4268001 4710 8 4268001 5470 5 4038001 6610 3 4218001 55470 5 4038001 6610 3 4218001 6640 3 4188001 8230 8 4278001 8230 8 4278001 8230 8 4278001 8230 8 4278001 11500 5 4038001 11500 5 4058001 11500 5 4058001 11500 5 4058001 11500 5 4058001 12800 5 4058001 12800 5 4058001 12800 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 13500 5 4058001 14000 6 3478001 14000 8 4268003 14000 8 4268003 14000 8 4268003 14000 6 3478001 14400 5 4178002 14800 6 3478001 14400 5 4178002 14800 8 4258002 14900	Sample mg/kg  3 4198001 28.9 8 4278001 82.8 1 357M001 92.2 5 4018001 142 2 4238101 151 2 4238001 171 5 4028001 174 2 4228001 200 5 4018003 223 3 4208001 233 5 4218001 241 5 4048003 244 5 4058003 247 5 4168003 253 5 4058103 261 5 4058003 261 5 4058003 274 5 4168003 324 5 4058003 274 5 4168003 361 5 4218001 314 8 4278003 361 5 4218001 314 8 4278003 361 5 4058002 372 2 4248003 362 8 4268001 336 3 4188002 352 2 4248003 362 8 4268001 336 5 4168102 367 5 4218002 352 2 4248003 362 8 4268001 405 5 4168002 372 2 4248003 362 8 4268003 363 5 4168102 367 5 4218002 412 2 4248002 412 2 4258003 426 6 4368001 405 5 4168002 418 2 4228003 426 6 4168002 430 1 361M001 402 5 4168002 418 2 4228003 426 6 4168002 433 3 4208003 434 5 4058001 444 6 347M001 449 3 4198003 453 5 4178001 456 6 4278002 464 6 347M001 476 8 4258002 479 3 4188003 483 5 4018002 484 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 484 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501 5 4048002 493 1 363M001 501
19418.22 6735.513 45367146	0.9597	2413.770 943.1692 889568.3	13013.37 5732.124 32857251	397.8209 235.9217 55659.07

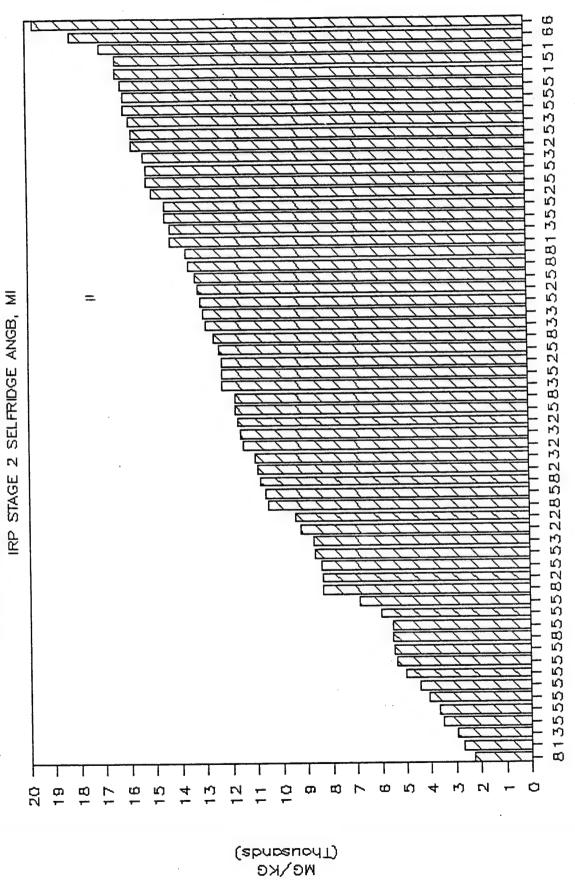
AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

## TABLE N-1 (Continued) SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

	· · · · · · · · · · · · · · · · · · ·										
	XDIUM mg/kg	Sample	CKEL ma/ka	Sample	EAD mg/kg	Sample	LICON ma/kg	Sample	/ANADIUM mg/kg	Sample	ZINC mg/kg_
					*******	Jampie					
1 357M001		<b>3</b> 419B001 .		8 425B001		6 347M001		8 427B001	6.59 7	1 357M001	
5 4018001		8 4278001	5.6 6.45	8 4258002		5 417B001	34.5 38.7	3 4198001	7	3 4198001	10.
3 419B001 5 403B101	00.0	1 357M001	6.45	8 4258003		3 418B003	38.7	1 357M001	7.35	8 4278001	12.4 23.9 24.
5 403B001	90.8 93.5	5 402B003	8.8	8 426B001		5 417B002	41.2	5 4018003	8.6	5 4058003	23.9
3 4208001	127	5 401B003 8 425B001	9	8 4268002 8 4268003		6 345M001	41.3	5 402B003	8.68	8 425B001	25.
5 402B001	145	5 405B003	9.2 10.1	8 4268003 8 4278001		5 416B003 3 420B003	44.9 62.6	5 4178003 5 4048003	10.9	5 402B003 5 405B103	27.
5 4028003	148	5 4048003	10.4	8 427B002		1 359M001	64.6	5 405B003	11 2	5 417R003	28
5 4048001	150	5 4178003	10.6	8 427B003		5 4168002	64.6 70.4	5 405B103	12.2	5 417B003 5 404B003	28 28.6
3 4188001	164	5 405B103	10.4 10.6 11.2 12.3 12.7	1 357M001		3 4188002	79.4	5 416B003	7.35 8.6 8.68 10.9 11.2 12.2 13.3 14.2 14.5	5 4168003 5 4058002 5 4018003	29.6
3 4208002	171	5 421B003	12.3	1 359M001		5 417B003	84.3	5 4218003	14.2	5 405B002	30.4
5 4048003	171	5 4058002	12.7	1 361M001		1 357M001	86.6	5 4058002	14.5	5 4018003	33.
3 4188101	171	5 4168003	12.7 13.9	1 363M001		3 4198002	89.8	5 403B003	15.4 17.5 18.2	5 403B003	35.2
5 4018003 5 4178003	183	2 4238001	13.9	2 422B001		3 4208002	97.4	3 4208001	17.5	5 4218003	36.5
5 417B003 3 419B002	195 215	3 4208001 5 4038003	14 16	2 4228002		5 421B001	102	2 4238001	18.2	2 423B001	42.7
5 4038003	247	5 403B003 2 423B101	16.8	2 422B003 2 423B001		5 404B002 2 423B101	104	5 403B001	18.9	8 426B001 2 423B101	43.1 44.1
5 405B003	250	5 4038001	16.8 17.1	2 423B101		5 4058103	111 123	5 403B101 5 403B002	19.1 20.7	5 401B001	46.
5 4178001	250 259	2 4228001	17.9	2 4238002		3 4188101	124	8 426B001	22.1	2 424R001	48.3
5 405B103	268	8 4268001	18.6	2 4238003		5 405B003	124	5 4048002	22.5	3 4188001	51.Z
6 347M001	268 270	5 403B101	18.8	2 4248001		5 401B002	127	2 4248002	22.5 22.5	3 4188001 5 4028001 2 4228001 5 4038101	51.7 53.
5 4028002	276	2 4248001	19.3	2 4248002		5 4028001	127	8 4278002	22.6 22.7 22.8	2 4228001	56
5 404B002	279	3 418B001	26.4	2 4248003		5 402B002	131	8 4258002	22.7	5 403B101	56.6
5 405B002	286	8 4258002	17.9 18.6 18.8 19.3 26.4 28.1	3 418B001		1 363M001	134	8 4268002	22.8	0 42/8003	56.6
5 4038002	293	8 427B002	28.1	3 418B101		8 4268003	140	3 4198003	22.9	5 416B102	56.8
3 419B003 6 345M001	294	8 426B002 3 420B002	29.2	3 418B002 3 418B003		8 426B002	150	8 425B003	23.2	5 4218001	58.
· 5 4058001	306 318	1 359M001	30 S	3 418B003 3 419B001		5 405B002 8 427B001	154 165	2 424B001 2 424B003	22.9 23.2 23.4 23.7	5 421B001 8 426B002 8 425B002	58.4 58.8
5 4018002	319	5 4168002	31.2	3 4198002		5 4048003	169	2 422B001	24.1	2 4248002	59.4
5 4168001	325	5 416B102	31.5	3 4198003		5 4168102	183	5 416B002	24.5	1 361M001	59.4 59.5
5 416B001 5 416B003	325 337	5 4218001	28.1 29.2 30 30.8 31.2 31.5	3 4208001		2 4248001	190	8 4268003	24.5 25.4	1 361M001 8 427B002	59.9 59.9 59.9
3 4188002	347	2 4248002	31.8 32.9 32.9 33.7 34 34.1 34.4 34.4 34.7	3 420B002		5 4018003	194	2 423B101	25.4 25.7	5 404B002 5 416B002	59.9
3 4208003	381 410	2 422B002 3 418B101	32.9	3 420B003		2 4248003	194	3 418B001	25.7	5 416B002	59.9
3 4188003	410	3 4188101	32.9	5 401B001		2 4238002	195	5 416B102	25.8	3 4208002	60.3
5 417B002 1 363M001	423 457	8 425B003	33.7	5 4018002		8 4278003	199	3 4188003	26.4	3 4208001	60.7
1 359M001	465	3 4188003 5 4218002	34	5 4018003 5 4028001		2 423B001 8 427B002	202	3 4208003	26.4 26.5	5 4048001 8 4258003	60.9 62.4
1 361M001	471	2 4238002	34 1	5 4028002		8 427B002 3 420B001	204 205	2 422B002 2 423B002	26.5	2 4248003	63.4
5 416B102	734	3 418B002	34.4	5 4028003		2 4228003	215	5 417R002	26.6 26.9 27.3	3 4188002	63.4
8 4278001	734 752	3 418B002 2 424B003	34.4	5 4038001	82.2	5 402B003	215 223	3 4198002	27.3	3 418B002 5 421B002	63.6
5 416B002	764	6 345M001	34.7	5 403B002		5 4218003	225	3 4188002	27.4	5 402R002	63.7
8 4268001	924	5 417B002	35.1	5 403B003		5 4218002	228 228	5 404B001	27.8 27.9 28.3 28.5	5 4178002 3 4188101 8 4268003 1 363M001	64.5
2 4248001	986	2 4238003	35.1	5 4048001		8 4268001	228	2 4228003	27.9	3 4188101	64.5
8 425B001 2 423B001	990	8 426B003	35.4	5 404B002		2 4238003	242 244	5 401B002	28.3	8 426B003	64.7
8 4268002	1050	2 422B003 5 404B002	33.3	5 404B003		3 4198001	244	3 4208002	28.5	7 /190007	. 64.7
8 4268002 2 4238101	1060 1070	5 404B002 8 427B003	35.5 35.8	5 405B001 5 405B002		8 4258001 3 4188001	268 278	5 421B002 5 405B001	28.6	3 4188003 5 4178001	65.3 65.3
8 425B002	1080	3 419B002	35.1 35.4 35.5 35.5 35.8 35.9 36.2 37.1 37.8 37.9	5 4058002		5 405B001	283	3 4188101	28.9 29.2 29.2 29.3	3 417B007	65.3
2 4228001	1110	5 4048001	35.9	5 405B103		5 416B001	284	5 4028002	29.2	3 4208003	65.5
2 422B001 5 421B003	1240	5 401B002	36.2	5 405B103 5 403B101	22.5	2 4228001	284 299	1 361M001	29.3	3 420B003 5 405B001	65.6
2 4228002	1240 1260 1260	1 361M001	37.1	5 4168001		8 4258002	300	5 421B001	29.6 29.7	5 4018002	65.6
5 4218001	1260	5 4168001	37.8	5 4168002		2 424B002	312	2 423B003	29.7	6 347M001	65.6 65.7 66.2
5 4218002	1330	5 4028002		5 4168102		8 4258003	320	8 427B003	30.2	5 4038002	66.2
8 4278002	1340	5 401B001	38.1	5 4168003		5 403B003	340	5 4168001	31.3	6 345M001	66.3
2 4248002 8 4268003	1390 1440	3 419B003 5 405B001	38.1 38.7	5 417B001 5 417B002		5 403B101 2 422B002	383 417	1 359M001 5 417B001	31.9 32.6	2 4238002 2 4238003	67.3
2 4238002	1440	5 403B007	39.5	5 4178002		1 361M001	477	6 345M001	33.1	2 4228003	68.1 68.2 69.3
8 4278003	1720	5 402B001	40.3	5 4218001		5 404B001	484	1 363M001	33.6	3 4198003	69.3
8 4258003	1830	5 417B001	40.5	5 4218002		3 419B003	495	6 347M001	34.7	2 4228002	69.8
2 4248003	1900	6 347M001	41.8	5 4218003		5 4038002	601	5 4028001	40.5	5 416B001	74.9
2 4238003	2050	3 4208003	337	6 347M001		5 401B001	625	8 4258001	41.1	1 359M001	78.3
2 4228003	2150	1 363M001	382	6 345M001		5 4038001	730	5 4018001	42.1	5 403B001	95.6
. 40	30.9372	77	77/50		E2 75	24	/ 553/	•	7 71144		4.34262
	5.3124		.77459 .35527		\$2.35	1/	4.5524 8.8925		3.71161 .274023	1	6.77199
	9578.1		42.759			22	168.98	6	8.45946		81.2998

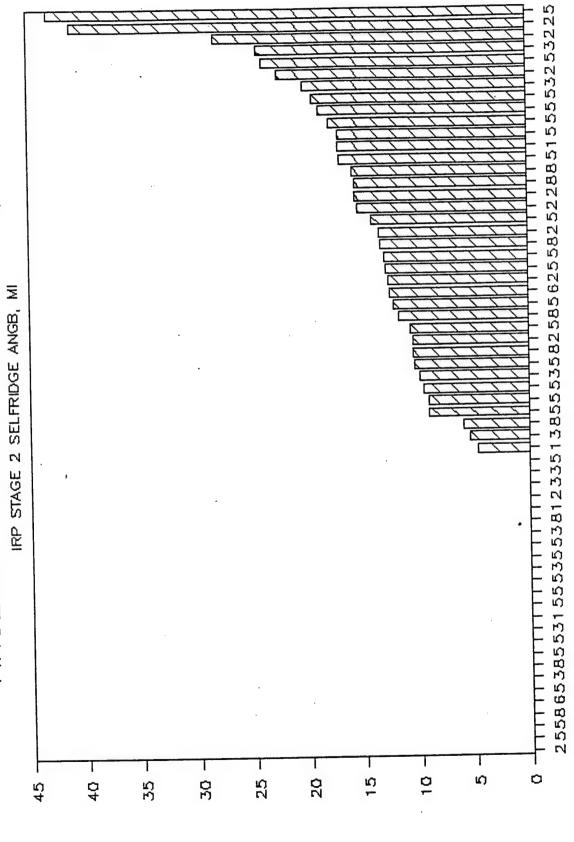
AVG - Average of detected concentrations.
SID - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

# ALUMINUM CONCENTRATION IN SOIL



SAMPLE CONCENTRATION BY SITE LOCATION



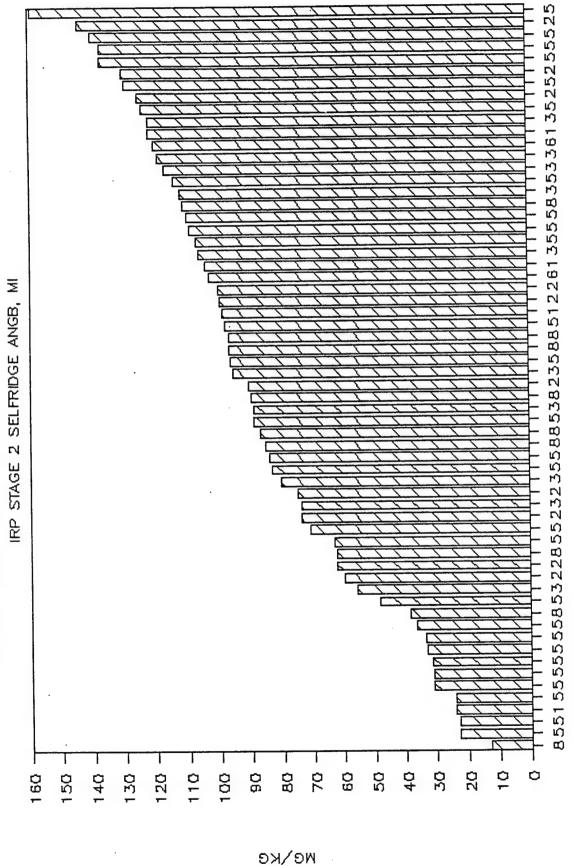


MG/KG

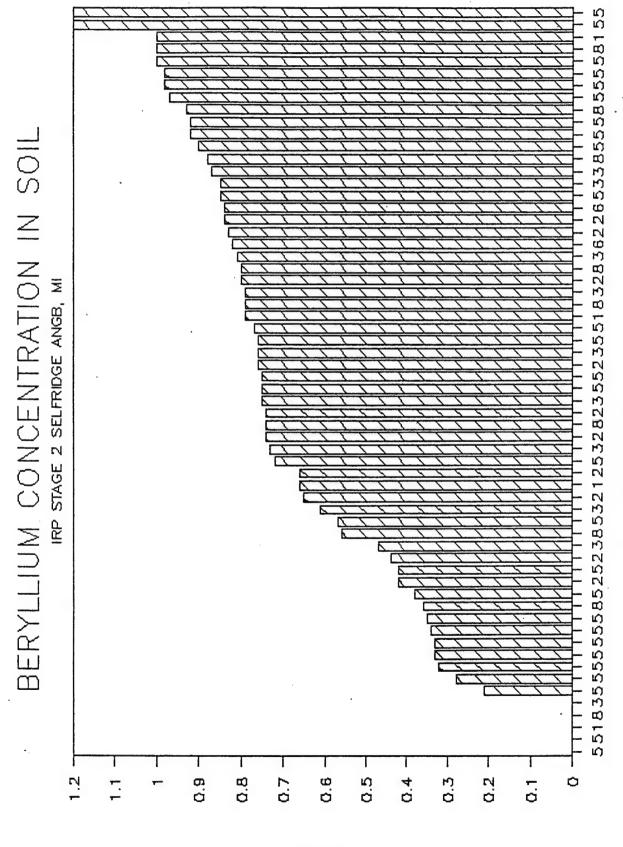
N-6

SAMPLE CONCENTRATION BY SITE LOCATION

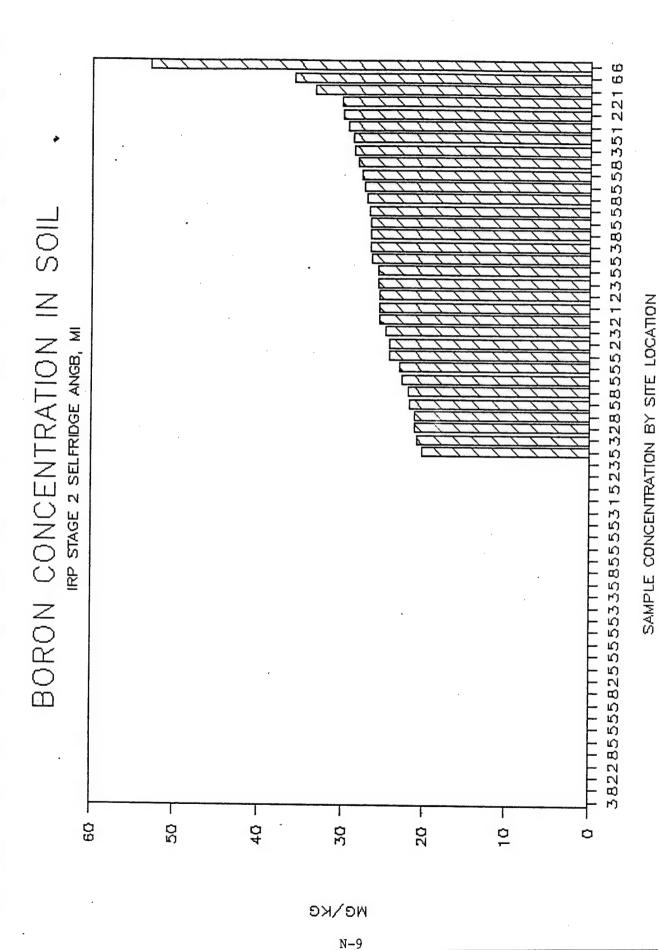
## BARIUM CONCENTRATION IN SOIL



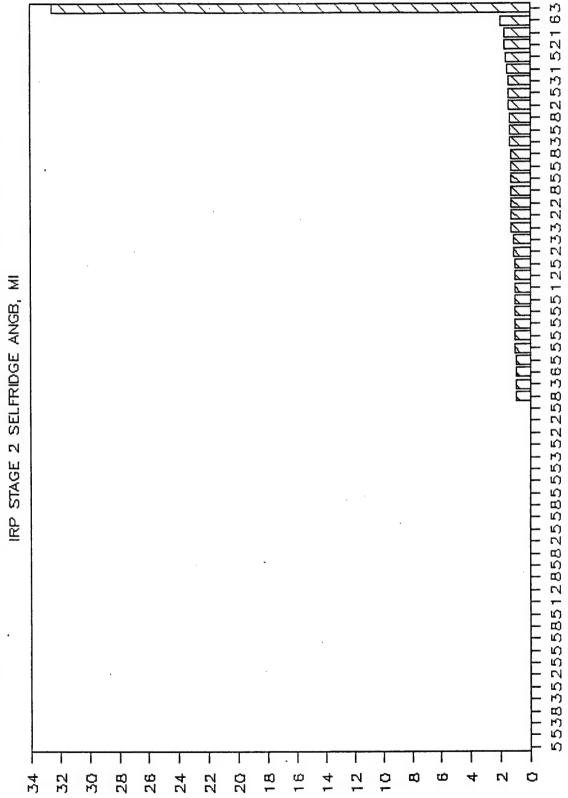
SAMPLE CONCENTRATION BY SITE LOCATION



SAMPLE CONCENTRATION BY SITE LOCATION

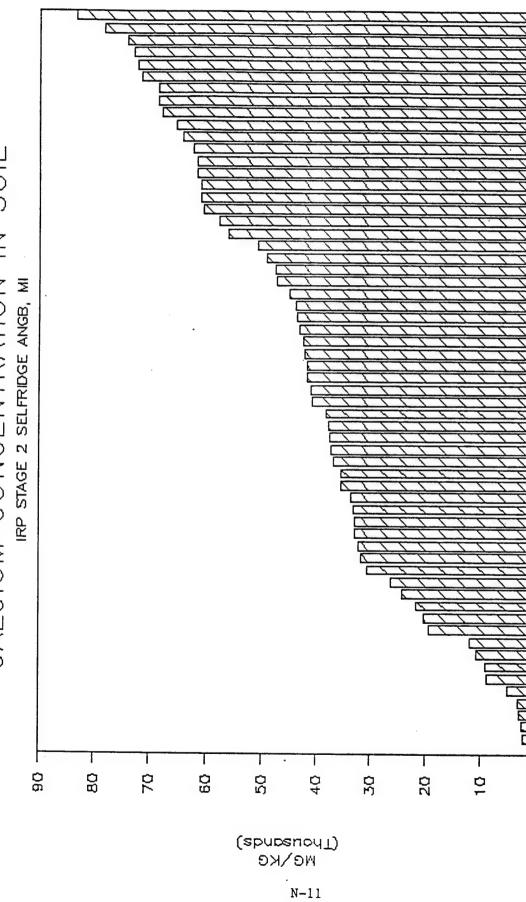


# CADMIUM CONCENTRATION IN SOIL



SAMPLE CONCENTRATION BY SITE LOCATION

# CALCIUM CONCENTRATION IN SOIL IRP STAGE 2 SELFRIDGE ANGB, MI

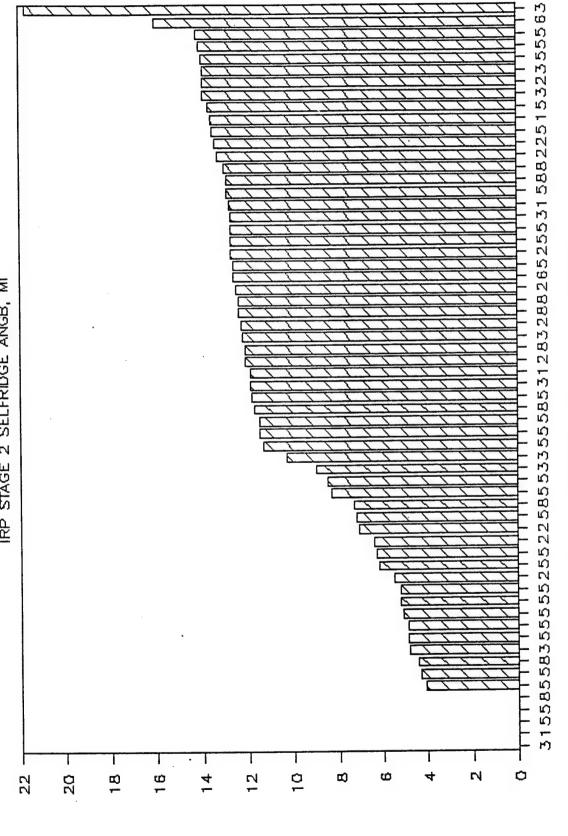


SAMPLE CONCENTRATION BY SITE LOCATION

322225355858133288318315865235682552855535152855555555555555555

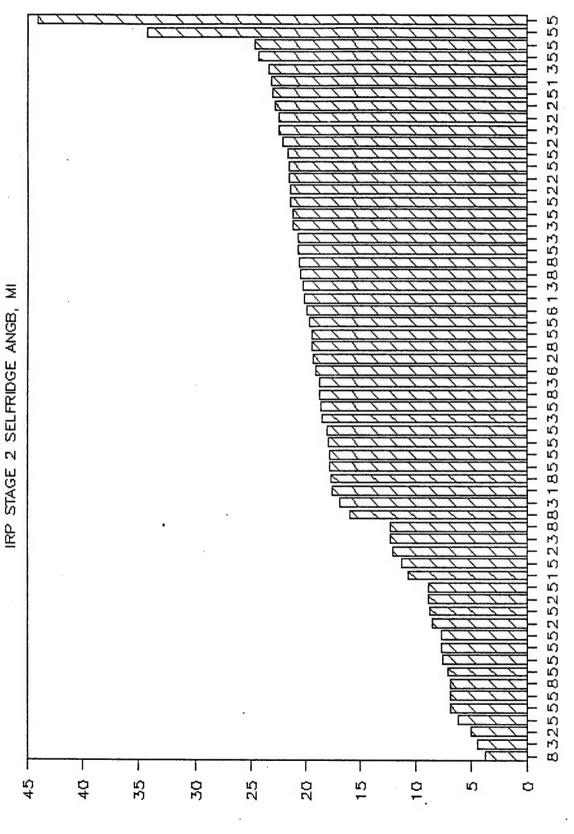
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## COBALT CONCENTRATION IN SOIL IRP STAGE 2 SELFRIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

## COPPER CONCENTRATION IN SOIL

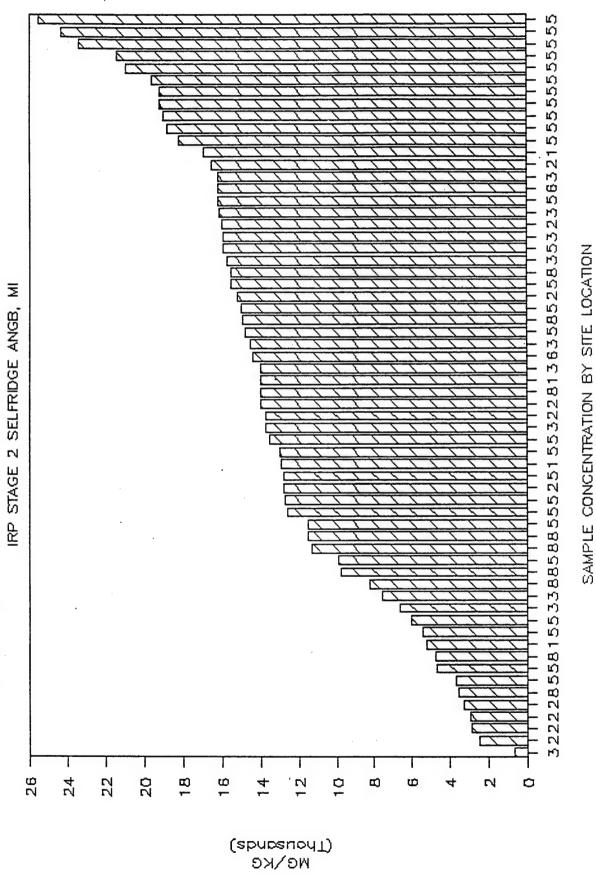


SAMPLE CONCENTRATION BY SITE LOCATION

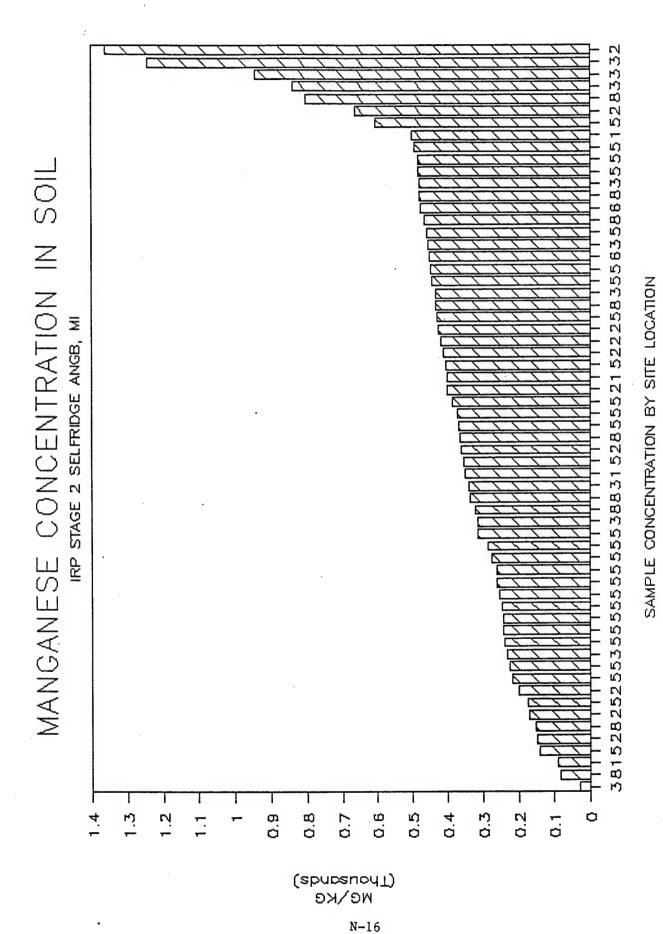
3815585555555555555282858322352558885331532368215335651555 IRON CONCENTRATION IN SOIL IRP STAGE 2 SELFRIDGE ANGB, MI O 14 12 9 B ψ 4 N 20 18 16 26 24 22 28 (Iponaduqa) WG\KG

SAMPLE CONCENTRATION BY SITE LOCATION

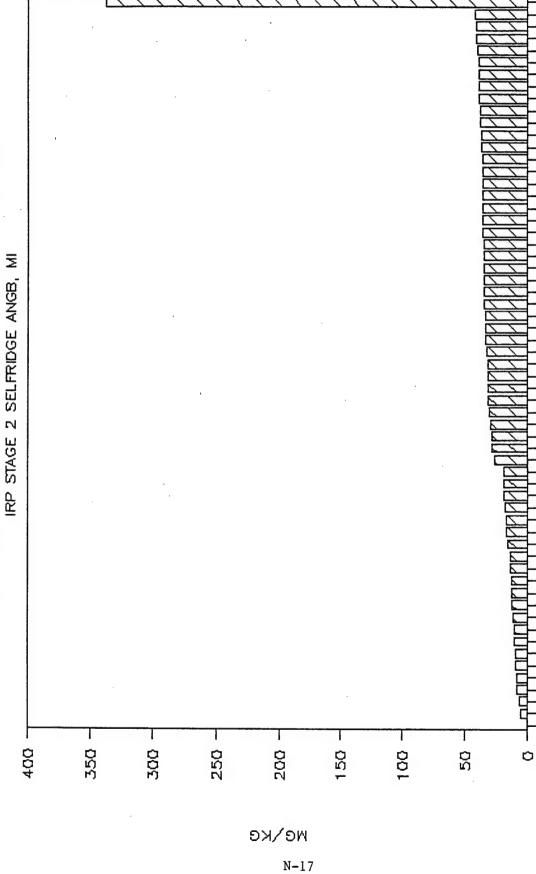
MAGNESIUM CONCENTRATION IN SOIL



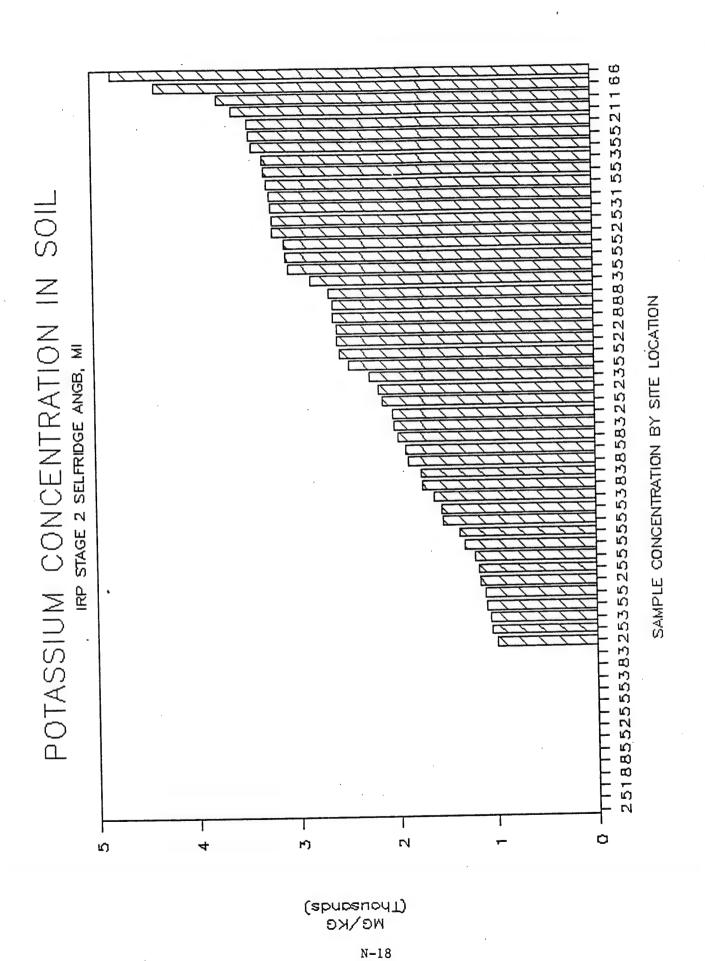
N-15



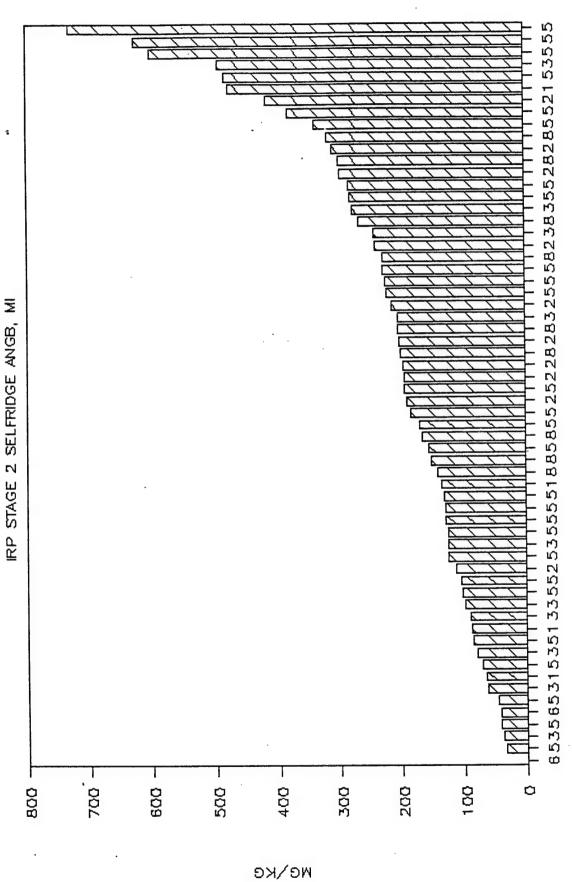
## NICKEL CONCENTRATION IN SOIL



SAMPLE CONCENTRATION BY SITE LOCATION

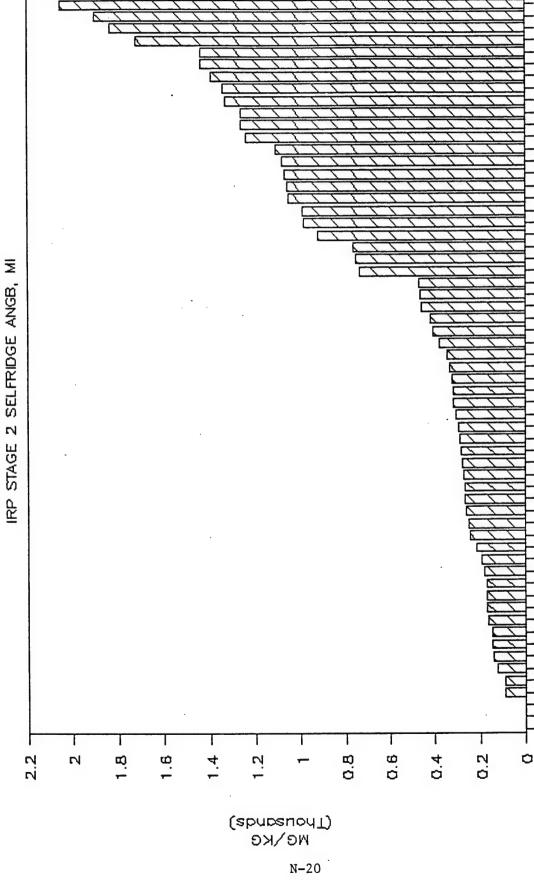


### SILICON CONCENTRATION IN SOIL



N-19

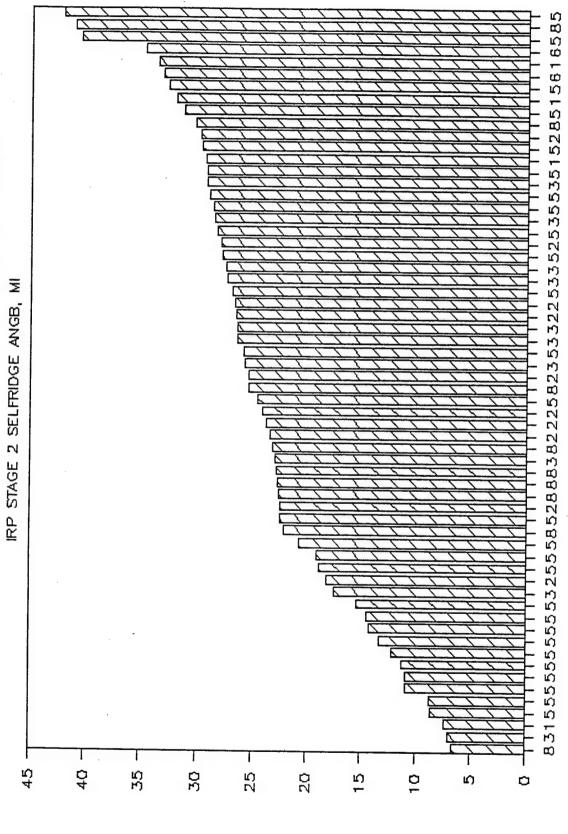
### SODIUM CONCENTRATION IN SOIL



SAMPLE CONCENTRATION BY SITE LOCATION

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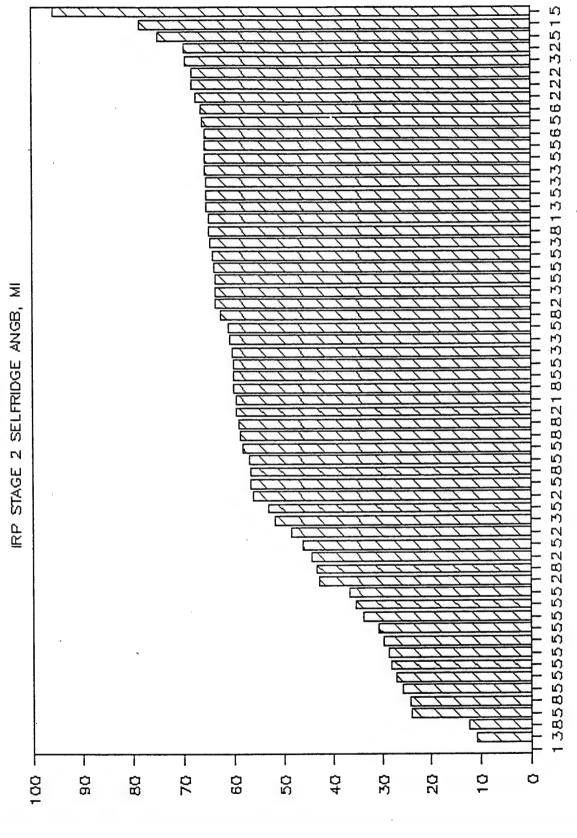
## VANADIUM CONCENTRATION IN SOII



SAMPLE CONCENTRATION BY SITE LOCATION

WG/KG

ZINC CONCENTRATION: IN SOIL IRP STAGE 2 SELFRIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

MG/KG



### APPENDIX 0

### HISTOGRAMS OF ANALYSES FOR GROUNDWATER AND SURFACE WATER SAMPLES

### TABLE 0-1 SORTED GROUNDWATER SAMPLE ANALYTICAL DATA IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

Chlor	 ide	Sulfat		Alk	-			PET H	YD
Sample	mg/l	Sulfat Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
1 158 M001 6 144 M001 6 144 M001 6 146 M001 6 108 M001 3 118 M001 3 118 M001 5 130 M101 5 130 M001 4 154 M001 7 104 M001 7 104 M001 7 104 M001 7 104 M001 7 104 M001 7 138 M001 4 159 M001 7 138 M001 4 148 M001 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 140 M01 7 136 M001 1 122 M001 7 136 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 126 M001 1 127 M001 1 128 M001 1 128 M001 1 129 M001 1 129 M001 1 120 M001 1 121 M001 1 123 M001 1 124 M001 1 125 M001 1 125 M001 1 126 M001 1 127 M001 1 128 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001	1.74 7.18 10.9	7 237 M021 7 136 M101 8 129 M001 7 1243 M021 1 124 M001 7 243 M021 7 1244 M001 7 243 M021 6 1245 M001 5 233 M021 6 136 M001 5 235 M001 4 253 M001 4 253 M001 1 136 M001 1 156 M001 1 156 M001 1 158 M001 1 158 M001 1 159 M001 1 159 M001 1 150 M001	2.7 2.9 3.6 6.7 9.8 13.1 13.5 20.6 22.5 22.2 26 36.3 36.5 36.8 46.8 62 63 63 64 64 65 74 76.4 82.6 83 85.2	5 235 M001 7 241 M001 4 113 M001 5 105 M001 1 156 M001 1 156 M001 1 1263 M001 1 263 M001 1 263 M001 7 239 M001 6 245 M001 1 257 M001 1 257 M001 1 257 M001 1 257 M001 1 257 M001 1 257 M001 1 162 M001 1 162 M001 1 164 M001 1 160 M001 7 140 M001	100 130 180 180 180 190 210 210 2210 2210 2230 2240 2250 230 240 250 240 250 330 330 340 420 440 450 440 450 470 480 480 480 480 480 480 480 480 480 48	7 241 M021 7 239 M001 4 113 M001 4 113 M001 4 111 M001 6 146 M001 7 102 M021 1 160 M001 4 115 M001 4 115 M001 3 117 M001 3 116 M001 3 116 M001 7 143 M021 7 243 M021 7 243 M021 7 144 M001 7 140 M021 6 144 M001 7 140 M021 6 144 M001 7 140 M021 7 138 M001 7 142 M021 7 138 M001 7 142 M021 7 138 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 125 M001 1 126 M001 1 127 M001 1 128 M001 1 129 M001 1 120 M001 1 120 M001 1 121 M001 1 122 M001 1 123 M001 1 124 M001 1 125 M001 1 126 M001 1 127 M001 1 128 M001 1 129 M001 1 129 M001 1 129 M001 1 120 M001 1 120 M001 1 120 M001 1 121 M001 1 122 M001 1 123 M001 1 124 M001 1 125 M001 1 126 M001 1 127 M001 1 128 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001 1 129 M001	350 380 380 440 550 560 560 560 610 620 640 640 640 640 6700 710 710 720 740 750 880 990 1100 1200 1300 1400 1700 1700 1700 1700 1700 1700 17	1 122 M101 1 122 M001 1 123 M001 1 124 M001 1 125 M001 1 126 M001 1 156 M001 1 156 M001 1 156 M001 1 160 M001 1 257 M001 1 257 M001 1 257 M001 1 257 M001 1 257 M001 1 257 M001 1 257 M001 2 166 M001 2 166 M001 2 166 M001 2 166 M001 4 113 M001 4 113 M001 4 115 M001 4 125 M001 4 125 M001 5 134 M001 6 144 M001 6 144 M001 6 144 M001 6 144 M001 6 144 M001 6 144 M001 6 144 M001 7 104 M001 7 104 M001 7 107 M001 7 108 M001 7 109 M001 6 110 M001 6 140 M001 7 101 M001 7 102 M001 7 103 M001 7 103 M001 7 103 M001 7 103 M001 7 103 M001 7 103 M001 7 103 M001 7 103 M001 7 103 M001 7 136 M001 7 137 M001 7 138 M001 7 138 M001 7 138 M001 7 138 M001 7 138 M001 7 138 M001 7 138 M001 7 138 M001 7 138 M001	1.1 1.1 1.2 1.3 1.4 1.4 1.6 1.8 2 2 2 2.1 2.1 2.1
STD VAR	939.9356 883479.0	STD	52.5679 23276.96	STD	713.0721 508471.8	STD	2183.310 4766842.		0.853697 0.7288

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms

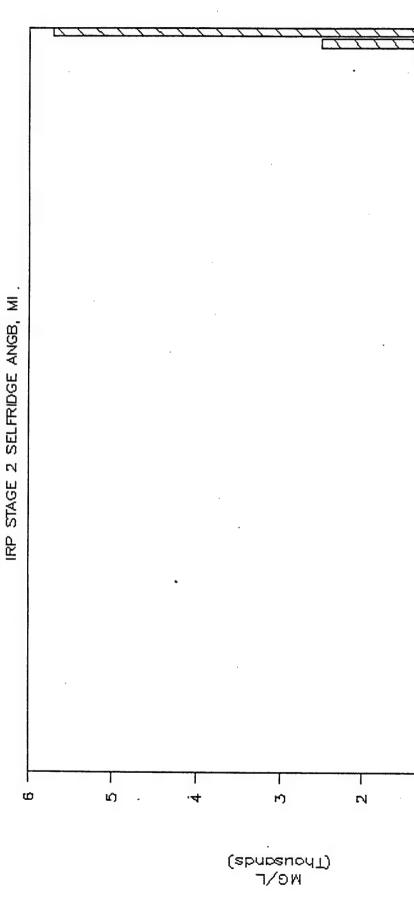
### TABLE 0-1 (Continued) SORTED GROUNDWATER SAMPLE ANALYTICAL DATA IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

COD Sample	mg/l	Ammonia Sample	a mg/l	TOC Sample	mg/l	BARIUM Sample	mg/l	ZINC Sample	mg/l
1 160 M021 6 146 M001 5 235 M001 1 257 M001 1 125 M121 5 167 M001 1 122 M021 5 105 M001 5 134 M001 5 134 M001 5 132 M001 5 231 M001 1 259 M001 6 247 M021 6 144 M001 5 107 M001 1 261 M001 5 130 M101 5 233 M001 5 130 M101 5 130 M101 5 130 M001 6 144 M001 5 130 M001 6 144 M001 5 130 M001 6 108 M021 1 162 M021 1 163 M021 1 156 M021 1 156 M021 1 158 M021 1 158 M021	18 23 29 30 31 31 45 55 55 56 57 57 69 74 69 74 80 88 100 293 380 480 700 1800	6 108 M001 1 124 M021 1 257 M001 5 132 M001 5 135 M021 5 167 M001 6 146 M001 1 125 M021 1 125 M001 1 125 M001 1 125 M101 1 125 M101 1 162 M021 1 162 M021 1 163 M001 1 124 M001 1 125 M121 1 263 M001 1 126 M001 1 127 M001 1 128 M021 1 128 M001 1 129 M001 1 120 M001 1 120 M001 1 121 M001 1 122 M021 1 160 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001 1 158 M001	0.3 0.5 0.5 0.5 0.5 0.5 0.6 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	1 160 M001 6 110 M001 6 247 M001 5 235 M001 5 167 M001 6 146 M001 1 123 M001 5 231 M001 5 237 M001 5 107 M001 1 263 M001 5 132 M001 1 162 M001 1 162 M001 1 122 M101 5 134 M001 1 125 M001	2.6 3.8 4.6 4.9 4.6 4.9 4.6 7.1 2.7 8.8 8.3 10 11 11 11 12 12 10 10 10 10 10 10 10 10 10 10 10 10 10	1 263 M001 3 118 M001 6 108 M001 6 109 M001 6 110 M001 6 114 M001 6 144 M001 6 145 M001 6 247 M001 3 117 M001 1 122 M101 1 162 M001 1 162 M001 1 152 M001 1 127 M001 1 127 M001 1 127 M001 1 128 M001 1 129 M001 1 120 M001 1 121 1 120 M001 1 121 1 120 M001 1 121 1 120 M001 1 122 M001 1 123 M001 1 124 M001 1 125 M001 1 125 M001 1 126 M001	0.052 0.058 0.068 0.068 0.102 0.1117 0.127 0.129 0.134 0.149 0.149 0.169 0.169 0.235 0.249 0.293 0.296 0.315 0.421 0.518 0.421 0.518 0.528 0.413 0.629 0.716 0.765 0.765	1 125 M001 1 156 M001 1 158 M001 1 158 M001 1 162 M001 1 257 M001 1 259 M001 1 261 M001 1 263 M001 5 105 M001 5 105 M001 5 107 M001 6 110 M001 6 110 M001 6 1144 M001 6 1144 M001 6 1144 M001 6 1144 M001 1 122 M101 2 165 M101 2 165 M101 2 164 M001 1 123 M001 1 123 M001 1 124 M001 2 166 M001 2 166 M001 2 166 M001 3 118 M001 1 127 M001 2 166 M001 3 118 M001 1 127 M001 2 166 M001 1 127 M001 2 166 M001 1 127 M001 2 166 M001 1 127 M001 1 124 M001	0.011 0.013 0.013 0.014 0.015 0.015 0.018 0.021 0.021 0.023 0.024 0.025 0.027 0.04 0.042 0.053 0.077 0.040 0.053

401.3333	AVG	1.578125	AVG	109.9387	AVG	0.107076	AVG	0.031347
1269.415	STD	2.164303	STD	395.1738	STD	0.241990	STD	0.026124
1611414.	VAR	4.684208	VAR	156162.3	VAR	0.058559	VAR	0.000682

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms

ALKALINITY CONCENTRATION IN GROUNDWATER

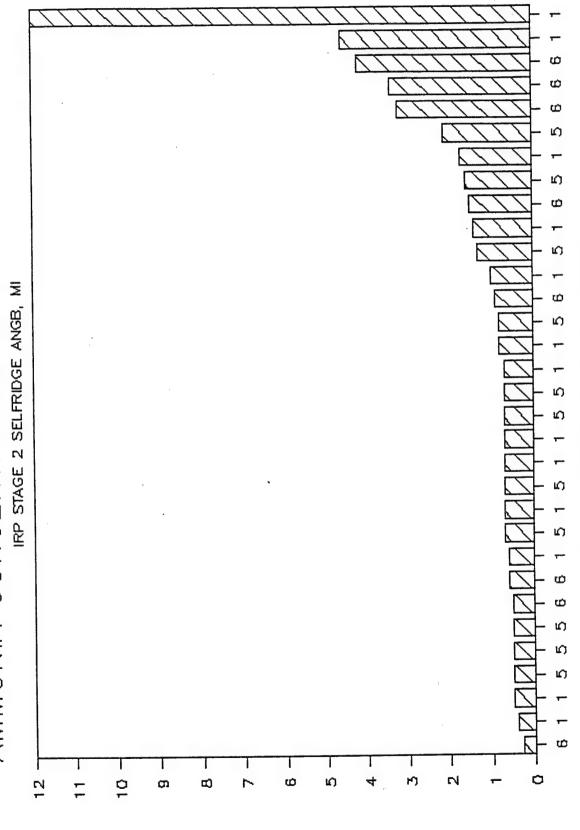


SAMPLE CONCENTRATION BY SITE LOCATION

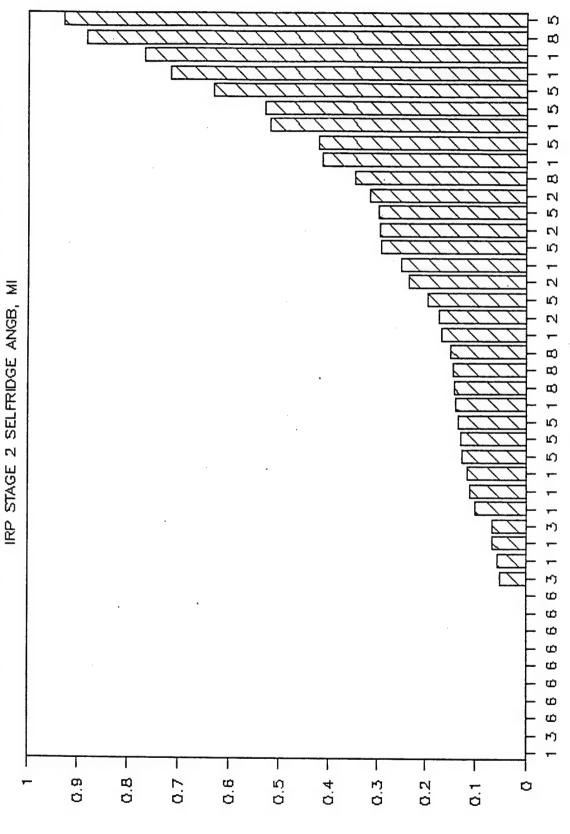
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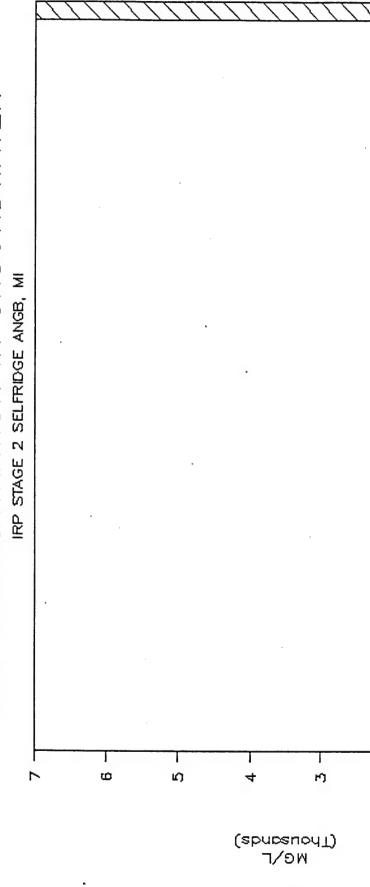




# BARIUM CONCENTRATION IN GROUNDWATER



# COD CONCENTRATION IN GROUNDWATER





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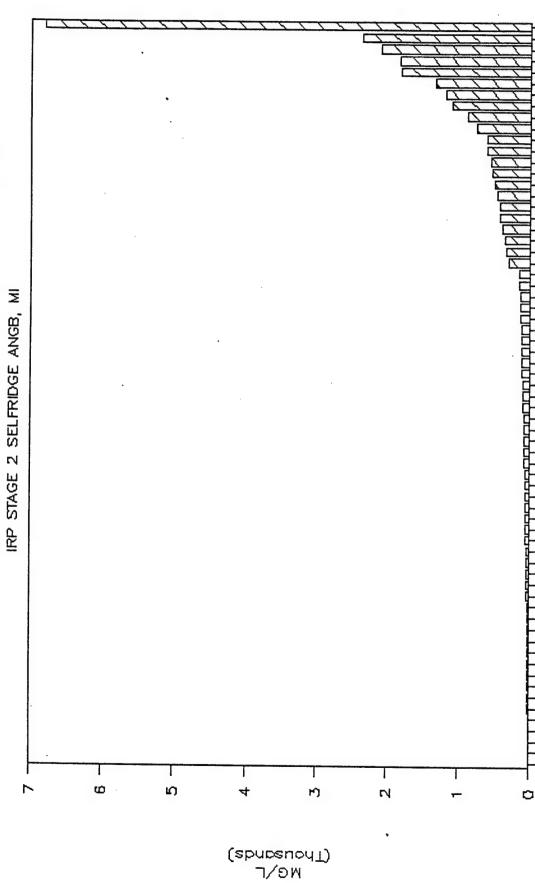
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6 5

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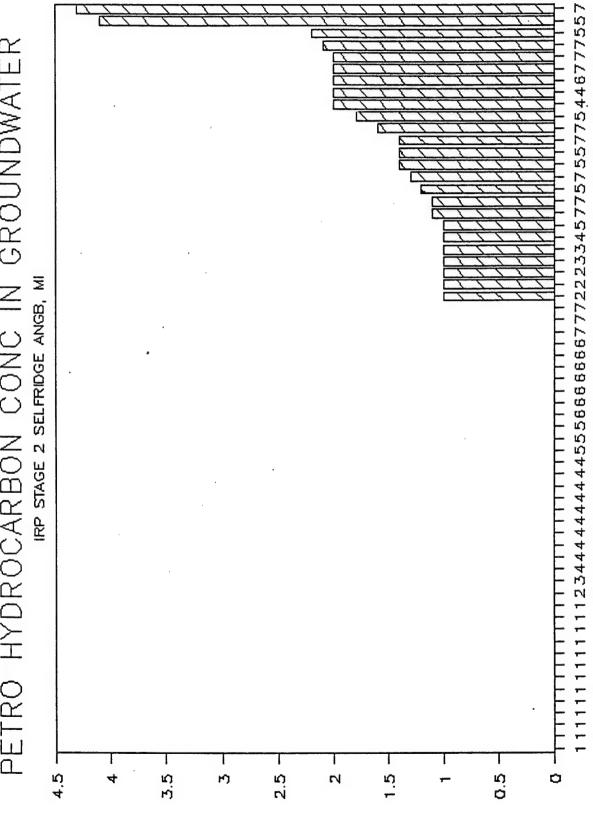
CHLORIDE CONCENTRATION IN GROUNDWATER



SAMPLE CONCENTRATION BY SITE LOCATION

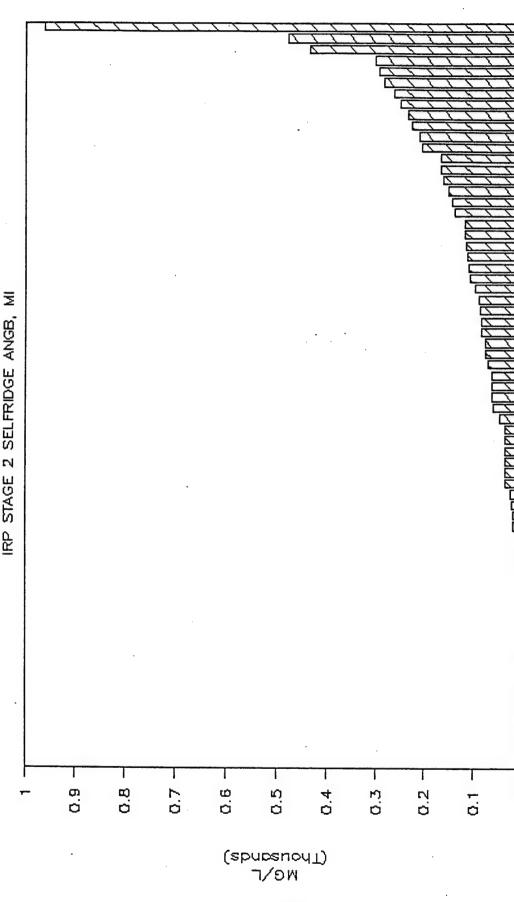
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SAMPLE CONCENTRATION BY SITE LOCATION

# SULFATE CONCENTRATION IN GROUNDWATER IRP STAGE 2 SELFRIDGE ANGB, MI

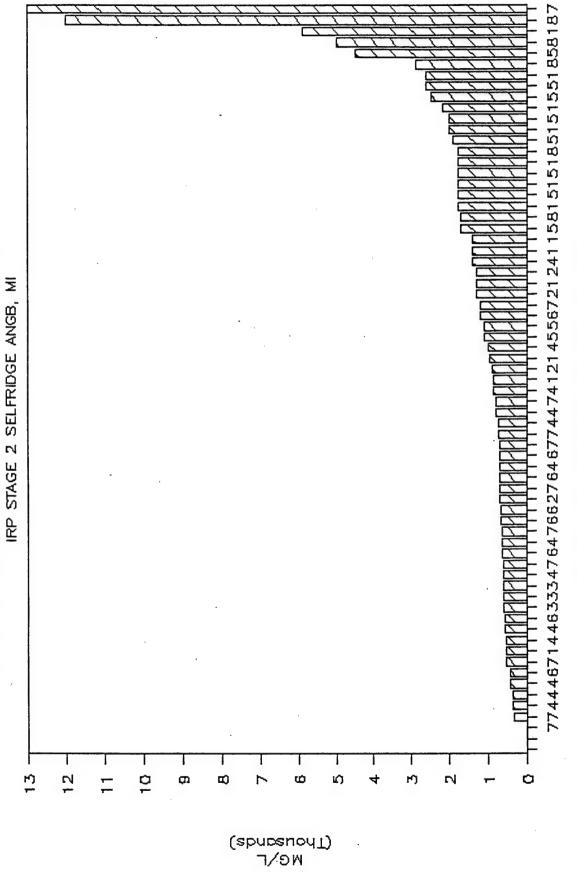


SAMPLE CONCENTRATION BY SITE LOCATION

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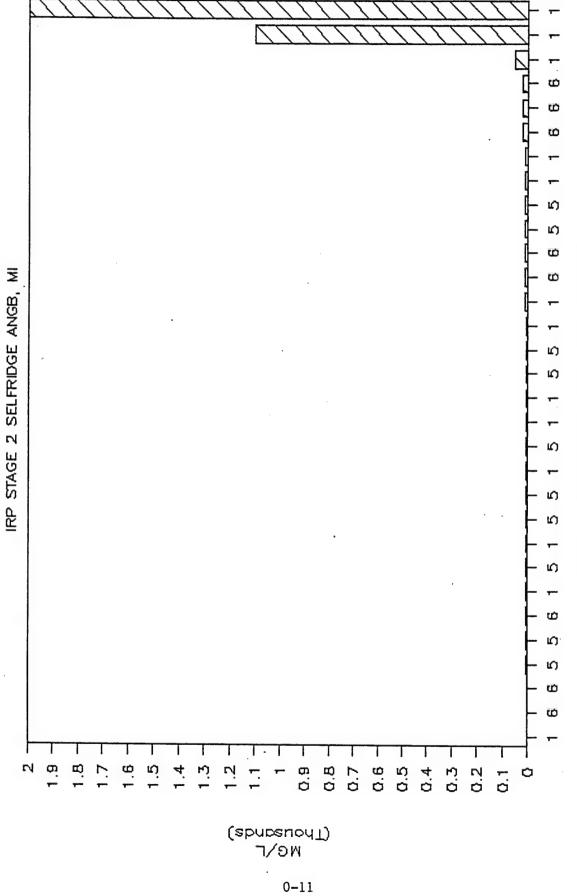
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### TDS CONCENTRATION IN GROUNDWATER IRP STAGE 2 SELFRIDGE ANGB, MI

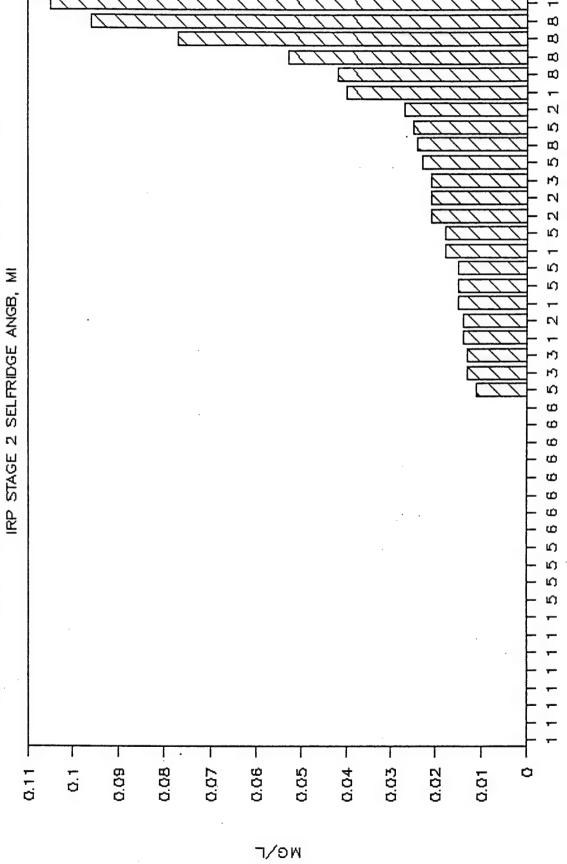


SAMPLE CONCENTRATION BY SITE LOCATION









### TABLE 0-2 SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 1 IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

	oride		fate	Al	k	TD	s	PE	T HYD
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
7 524 W001 6 520 W001 2 508 W001 1 505 W001 4 510 W001 4 511 W001 2 509 W001 1 503 W001 1 503 W101 2 507 W001 1 503 W101 2 507 W001 4 512 W001 7 523 W001 7 523 W001 7 523 W001 7 524 W001 5 518 W001 1 504 W001 5 518 W001 5 516 W001 1 502 W001 5 514 W001 5 515 W001	3.3 4.4 4.8 6.5 8 12.9 22.5 22.5 29.4 30.5 42.4 43.3 45 51.1 56.6 62.2 97.1 97.6 126 186 888 1340	7 524 W001 1 505 W001 2 507 W001 5 514 W001 6 520 W001 2 508 W001 4 510 W001 7 522 W001 2 506 W001 1 503 W001 1 503 W101 7 521 W001 7 521 W001 7 523 W001 2 509 W001 1 504 W001 5 515 W001 4 512 W101 4 512 W101 4 512 W001 5 516 W001 1 502 W001 1 500 W001	10.7 11.2 11.7 13.3 15.8 16.7 21.8 22.8 27.6 27.6 27.8 28.2 30.1 33.3 33.9 48.2 50.4 100 199	7 524 W001 5 520 W001 5 517 W001 5 518 W001 7 521 W001 7 522 W001 7 522 W001 4 513 W001 4 512 W001 1 504 W001 6 519 W001 1 503 W001 7 523 W001 7 523 W001 1 503 W001 1 503 W101 1 503 W101 1 505 W001 1 505 W001 5 515 W001 5 514 W001 5 514 W001 2 506 W001	180 180 190 200 240 290 300 320 320 320 320	1 501 W001 1 503 W001 2 506 W021 5 515 W001 7 524 W021 6 520 W021 1 505 W021 2 508 W121 1 504 W021 5 518 W121 2 508 W021 2 508 W021 4 512 W021 4 513 W021 4 513 W021 7 522 W021 4 510 W021 7 523 W021 1 502 W021 5 517 W021 6 519 W021 7 521 W021 7 521 W021	100 240 270 290 310 310 330 460 460 470 500 530 540 640 690 2500	1 503 W001 1 503 W101 1 505 W001 2 506 W001 2 507 W001 6 520 W021 7 522 W021 7 524 W021 7 524 W001 5 515 W001 1 502 W001 5 517 W001 4 510 W001 6 519 W001 4 512 W001 4 512 W001 4 512 W001 4 512 W001 4 512 W001 2 508 W001 2 508 W001 7 521 W001	1.1 1.1 1.3 1.5 1.6 1.7 1.7 1.9 2 2 2.4 2.5 4.6
STD 2	139.932 298.1357 88884.94		38.356 37.98786 1443.077	AVG STD VAR	340.3846 125.5903 15772.92		518.5 476.6159 227162.7	AVG STD VAR	1.876470 0.793005 0.628858

### SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 2 IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

Chloride	Sulfate	Alk	TDS	PET HYD
Sample mg/l	Sample mg/l	Sample mg/l	Sample mg/l	Sample mg/l
7 522 W002 160 5 516 W002 245 5 518 W002 248 1 502 W002 308 1 501 W002 328	2 507 W002 5 518 W002 1 503 W002 4 510 W002 5 514 W002 2 508 W002 5 520 W002 7 524 W002 2 509 W002 4 513 W002 4 513 W002 4 513 W002 4 516 W002 5 516 W002 5 516 W002 6 520 W002 5 516 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 6 519 W002 7 525 80 1 501 W002 1 501 W	7 524 W002 72 5 516 W002 130 5 518 W002 170 6 520 W002 210 7 521 W002 240 4 512 W002 260 4 512 W002 260 4 511 W002 270 5 517 W002 280 2 508 W002 290 1 503 W002 290 1 503 W002 300 6 519 W002 310 1 503 W102 360 1 501 W002 480 1 501 W002 680 2 507 W002 2500	5 515 W022 7 524 W022 110 5 517 W022 170 5 518 W022 170 6 520 W022 270 6 520 W022 330 1 503 W102 340 2 508 W002 350 1 505 W002 380 1 503 W002 380 2 509 W002 410 4 513 W002 420 4 512 W002 440 7 523 W022 440 4 510 W002 460 7 522 W022 460 6 519 W022 530 7 521 W022 530 7 521 W022 530 7 521 W022 570 1 504 W002 600 1 502 W002 1100 1 501 W002 1400 5 514 W002 2000	1 502 W002 5 515 W002 4 511 W002 1.2 4 512 W002 1.3 2 509 W002 1.3 1 503 W102 1.3 4 512 W002 1.4 1 504 W002 1.4 1 504 W002 1.4 7 524 W022 1.4 7 524 W022 1.5 1 503 W002 1.5 1 501 W002 1.5 1 501 W002 1.5 1 501 W002 1.5 1 501 W002 1.6 7 521 W022 1.6 2 508 W002 1.6 7 522 W022 1.7 5 516 W022 1.8 5 518 W022 1.9 4 513 W002 1.9 6 520 W022 1.9 6 520 W022 1.9 6 517 W022 2.3 5 517 W022 2.6 6 519 W022 3.6
AVG 175.8541 STD 286.3598 VAR 82001.94	AVG 60.97083 STD 61.61549 VAR 3796.468	AVG 392.48 STD 446.3617	AVG 547.0833 STD 418.9220	AVG 1.717391 STD 0.534588

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

### TABLE 0-2 (Continued) SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 1 IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

COD		Ammor	nia	TOC		BARIU	М	ZINC	
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
1 505 W001 5 517 W001 5 518 W001 1 504 W001 5 514 W001 5 516 W001 1 502 W001 1 503 W101 5 515 W001 6 520 W001 6 519 W001	10 19 19 22 24 26 41 50 50 57 160 390	1 504 W001 1 505 W001 1 502 W001 1 503 W001 1 503 W101 5 517 W001 1 501 W001 5 514 W001 5 518 W001 6 519 W001 6 519 W001 5 516 W001 5 515 W001	0.1 0.2 0.2 0.3 0.4 0.5 0.6 0.6 0.8	1 505 W001 5 517 W001 1 504 W001 5 518 W001 5 514 W001 6 520 W001 1 502 W001 1 503 W001 1 503 W001 1 503 W101 6 519 W001	4 6.4 6.6 7.1 7.7 8.3 11 12 17 17 17	1 504 W001 1 505 W001 2 508 W001 2 509 W001 5 517 W001 5 518 W001 6 519 W001 1 503 W101 2 506 W001 1 502 W001 5 516 W001 5 516 W001 5 514 W001 6 520 W001 5 515 W001 5 515 W001	0.051 0.054 0.068 0.069 0.074 0.101 0.163 0.177 0.207 0.354 0.518	1 505 W001 2 509 W001 1 503 W101 1 504 W001 5 517 W001 2 508 W001 5 514 W001 1 503 W001 5 518 W001 5 519 W001 6 519 W001 2 506 W001 2 506 W001 2 507 W001 6 520 W001	0.011 0.011 0.012 0.013 0.015 0.021 0.021 0.036 0.042 0.046 0.056 0.058 0.102 0.143 0.44

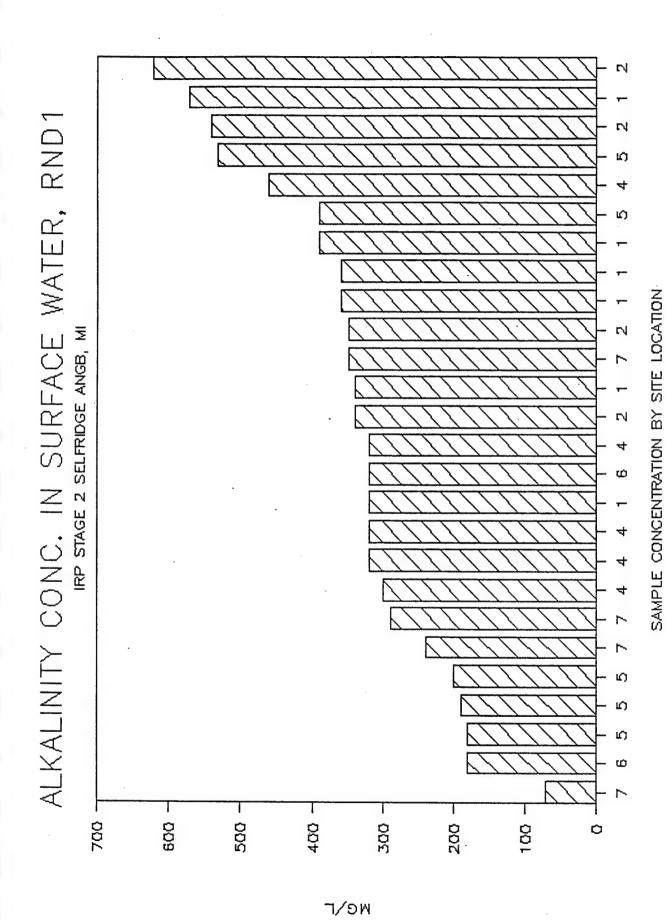
AVG 79.07692 AVG 0.446153 AVG 14.65384	AVG 0.166909	AVG 0.0684
STD 101.7148 STD 0.276281 STD 13.14215	STD 0.140945	STD 0.105695
VAR 10345.91 VAR 0.076331 VAR 172.7163	VAR 0.019865	VAR 0.011171

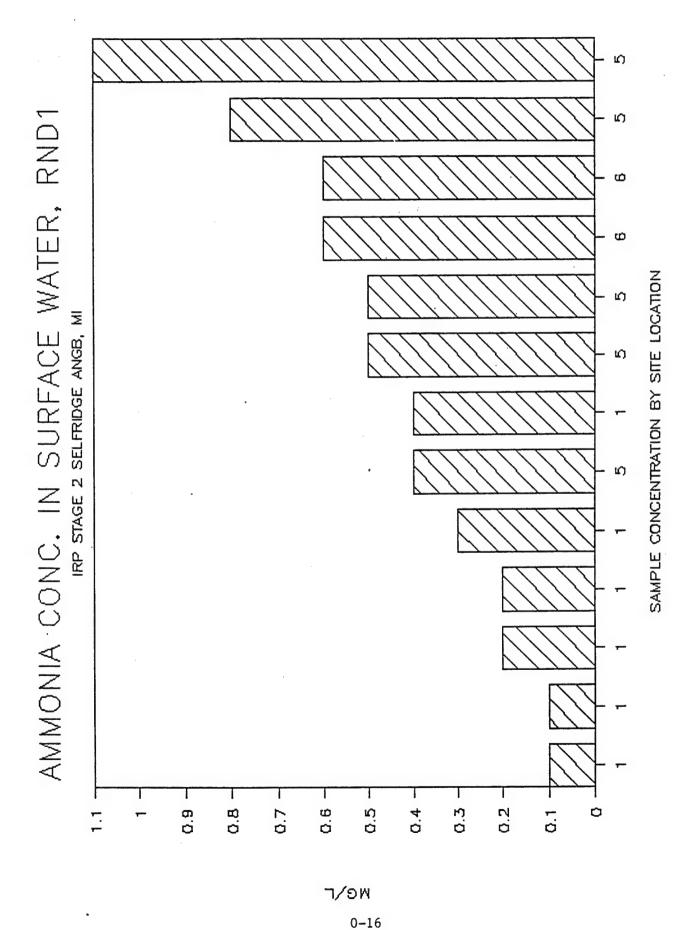
### SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 2 IRP STAGE 2 SELFRIDGE ANGB, MICHIGAN

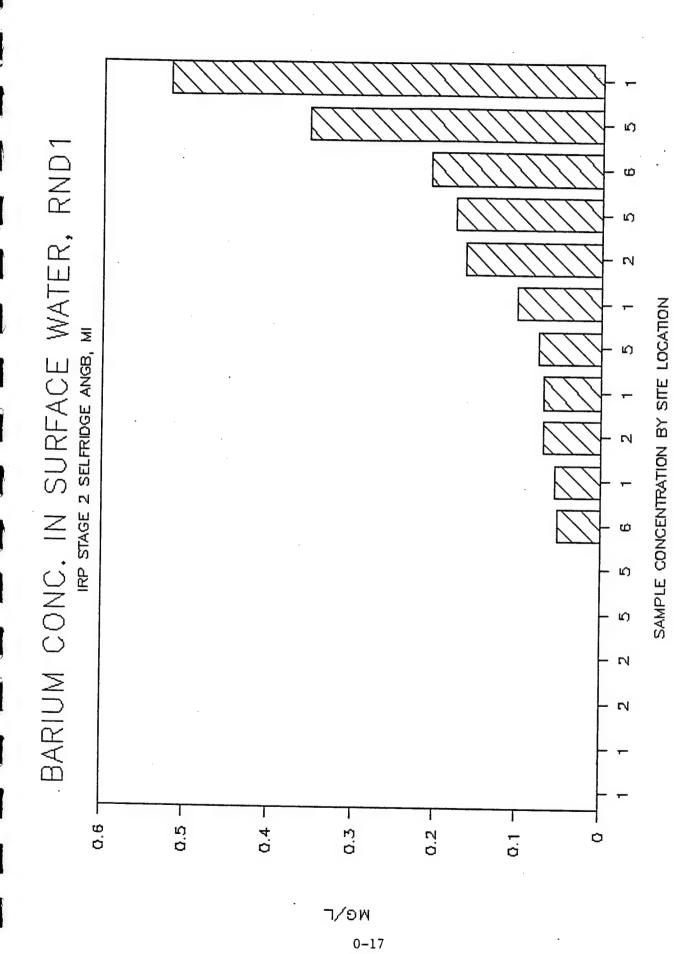
COO		Ammon		TOC		BARIU		ZINC Sample	mg/l
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	ampre	
1 501 W022 1 503 W022 5 515 W022 1 505 W022 5 516 W022 1 504 W002 5 518 W002 5 517 W002 1 502 W002 6 520 W022 5 514 W022 6 519 W002	11 29 31 37 39 60 64 76 80	1 502 W002 1 505 W002 1 501 W002 5 518 W002 1 503 W102 1 503 W102 5 517 W002 6 519 W002 6 520 W002 5 516 W002 5 516 W002 5 516 W002	0.2 0.2 0.2 0.3 0.4 0.4 1.8	1 504 W002 5 518 W002 5 515 W002 5 516 W002 5 517 W002 6 520 W002 6 520 W002 1 502 W002 6 519 W002 1 503 W102 1 503 W002 1 503 W002	6.1 6.4 8.5 8.8 12 15 16 24 31 34	1 503 W102 1 504 W002 1 505 W002 2 508 W002 2 509 W002 5 516 W002 6 519 W002 5 518 W002 1 503 W002 5 517 W002 1 502 W002 2 507 W002 5 514 W002 1 501 W002 5 515 W002 6 520 W002	0.052 0.06 0.102 0.11 0.155 0.221 0.28 0.385 1.31	1 504 W002 1 505 W002 2 509 W002 5 514 W002 2 508 W002 5 517 W002 5 518 W002 1 503 W102 1 503 W002 5 516 W002 5 516 W002 1 502 W002 2 507 W002 6 520 W002	0.013 0.017 0.034 0.039 0.041 0.044 0.056 0.07 0.091 0.108 0.148 0.242 0.943

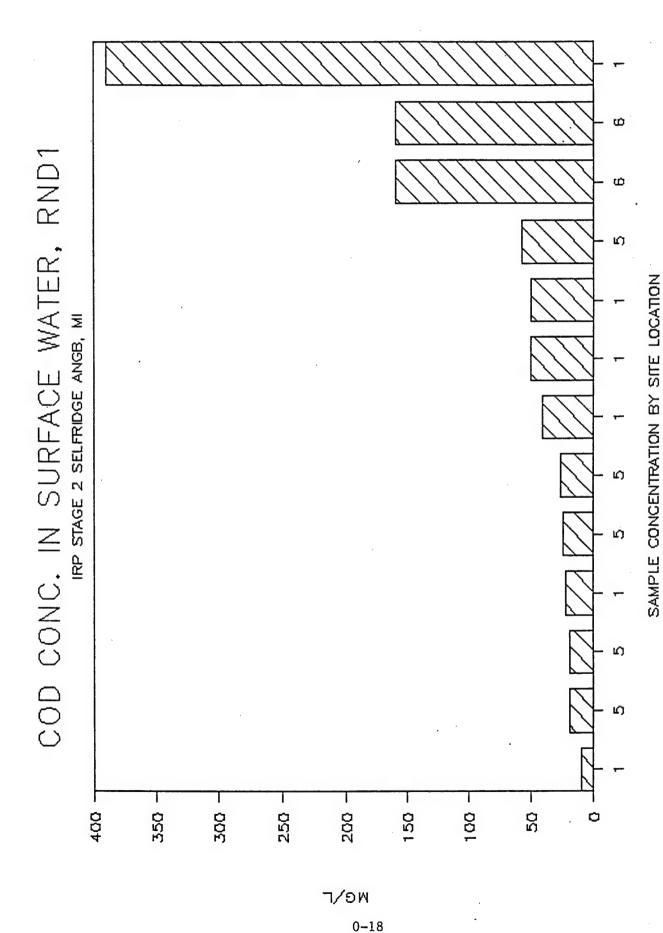
		<b>_</b>	 				
47.44444 22.17661 491.8024	AVG STD VAR	0.55 0.492442 0.2425	22.48333 25.07298 628.6547	AVG STD	0.297222 0.372578 0.138814	AVG STD VAR	0.145071 0.230532 0.053145

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

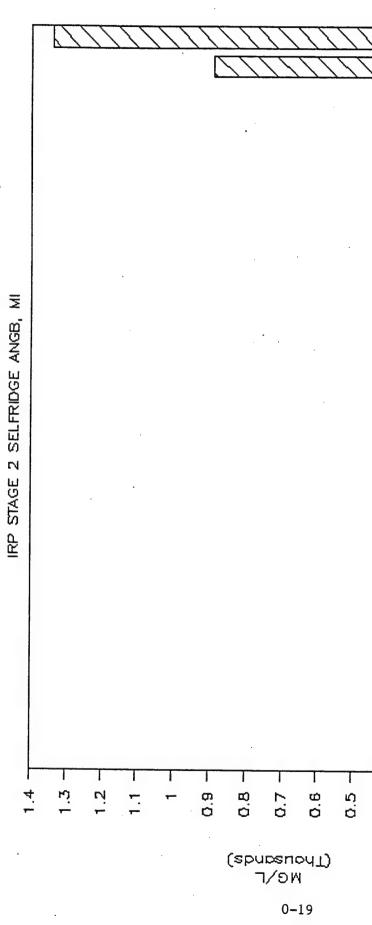








CHLORIDE CONC. IN SURFACE WATER, RND1



SAMPLE CONCENTRATION BY SITE LOCATION

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4.0

0.3

0.2

0.1

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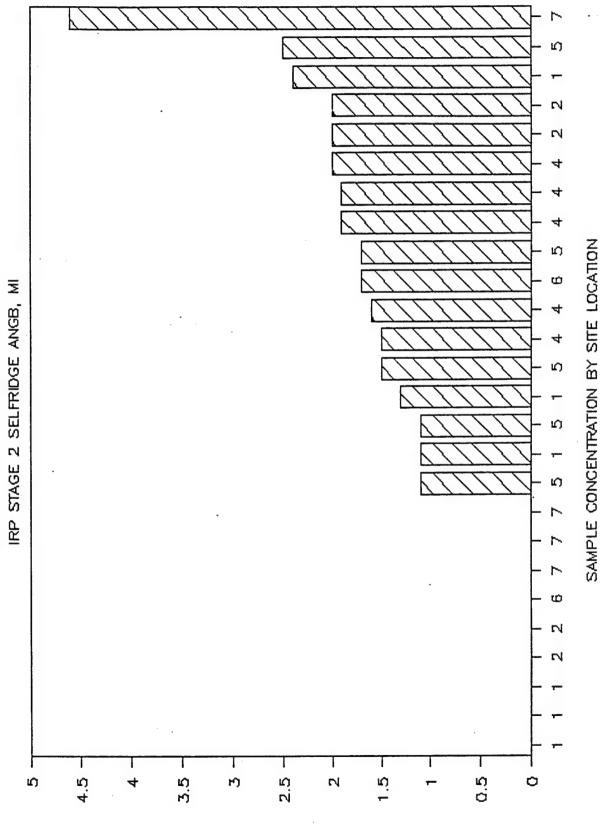
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PET. HYD. CONC. IN SURFACE WATER, RND1

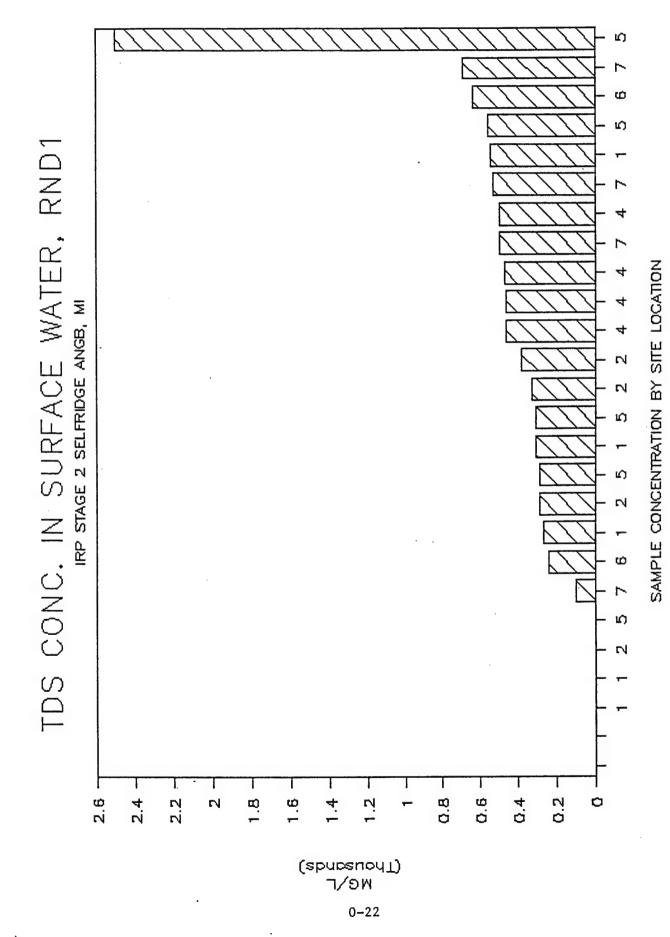


MG/L

0-20

SULFATE CONC. IN SURFACE WATER, RND1 IRP STAGE 2 SELFRIDGE ANGB, MI N Ø S Ö

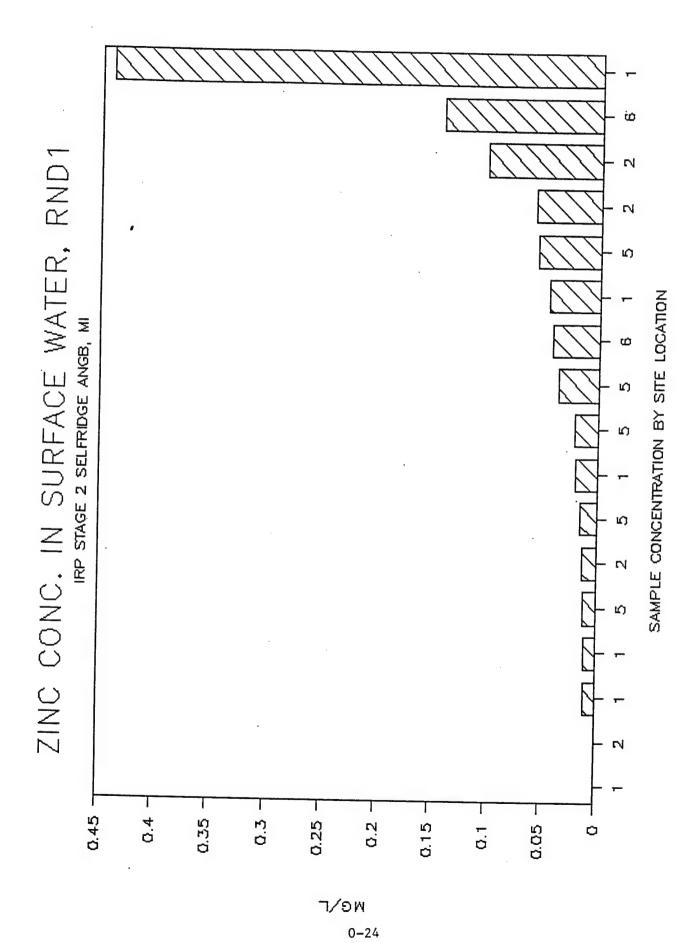
SAMPLE CONCENTRATION BY SITE LOCATION



TOC CONC. IN SURFACE WATER, RND1 IRP STAGE 2 SELPRIDGE ANGB, MI S 50 20 H 60 40 0 30 Ö

MG/L

0-23



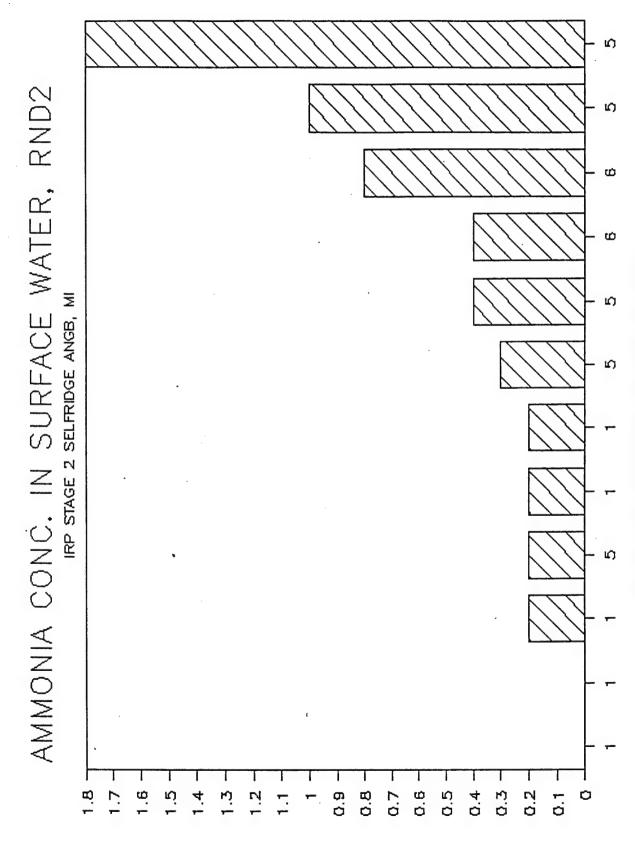
ALKALINITY CONC. IN SURFACE WATER, RND2 IRP STAGE 2 SELFRIDGE ANGB, MI 2.6 2.4 2.2 **1**.8 0.8 <u>.</u>6 0.6 4.0 N 4. 0.2 Ö 1.2 (Thousands) MG/L

SAMPLE CONCENTRATION BY SITE LOCATION

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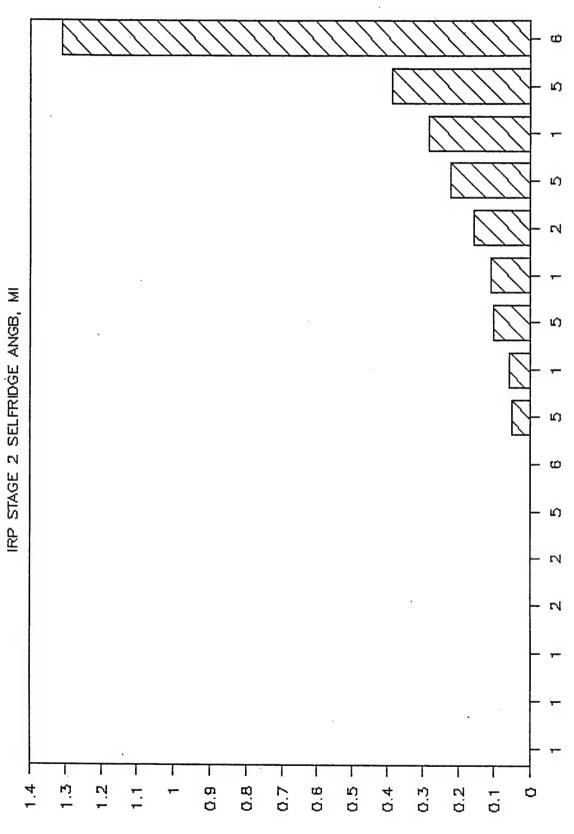
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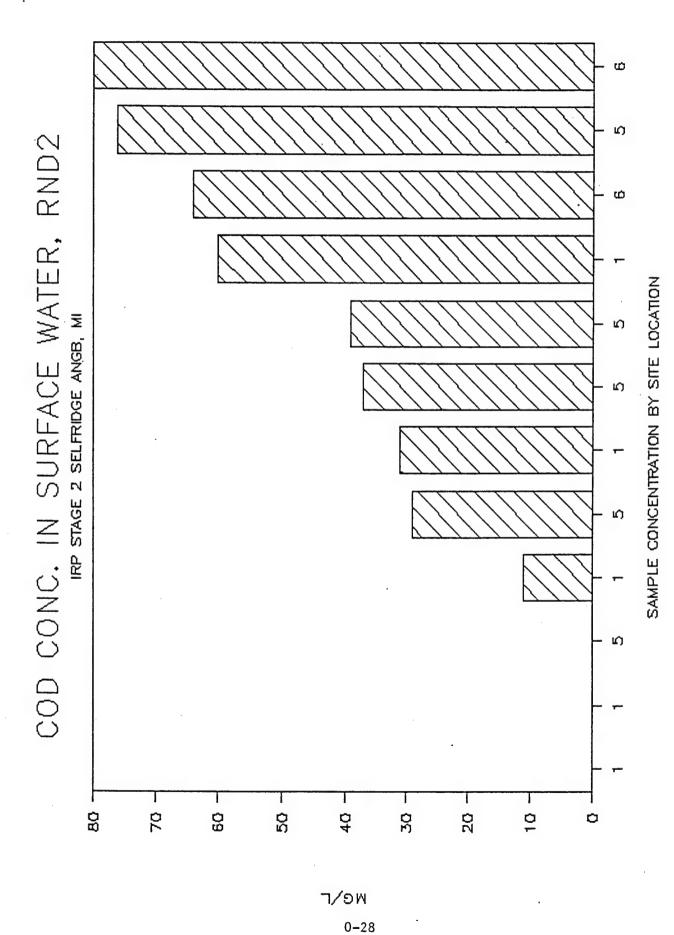
SAMPLE CONCENTRATION BY SITE LOCATION

BARIUM CONC. IN SURFACE WATER, RND2



MG/L

0-27



CHLORIDE CONC. IN SURFACE WATER, RND2 IRP STAGE 2 SELFRIDGE ANGB, MI 1.2 0.9 **L**. 0.8 0.7 0.6 0.5 (Thousanda) AG/L

SAMPLE CONCENTRATION BY SITE LOCATION

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4.0

0-29

0.3

0.2

Ö.1

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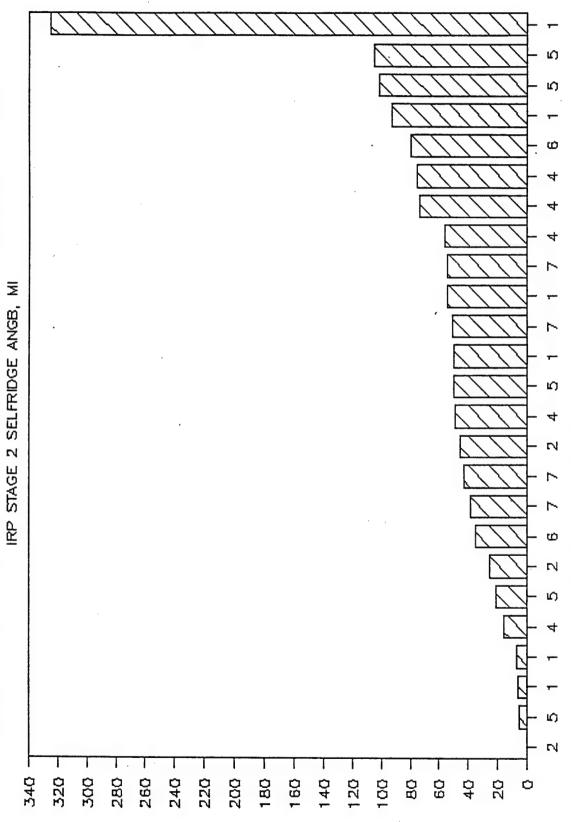
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ώ Ŋ PET. HYD. CONC. IN SURFACE WATER, RND2 IRP STAGE 2 SELFRIDGE ANGB, MI S S 2.5 3.5 m 5. 0.5 2 Ö

MG/L

0-30

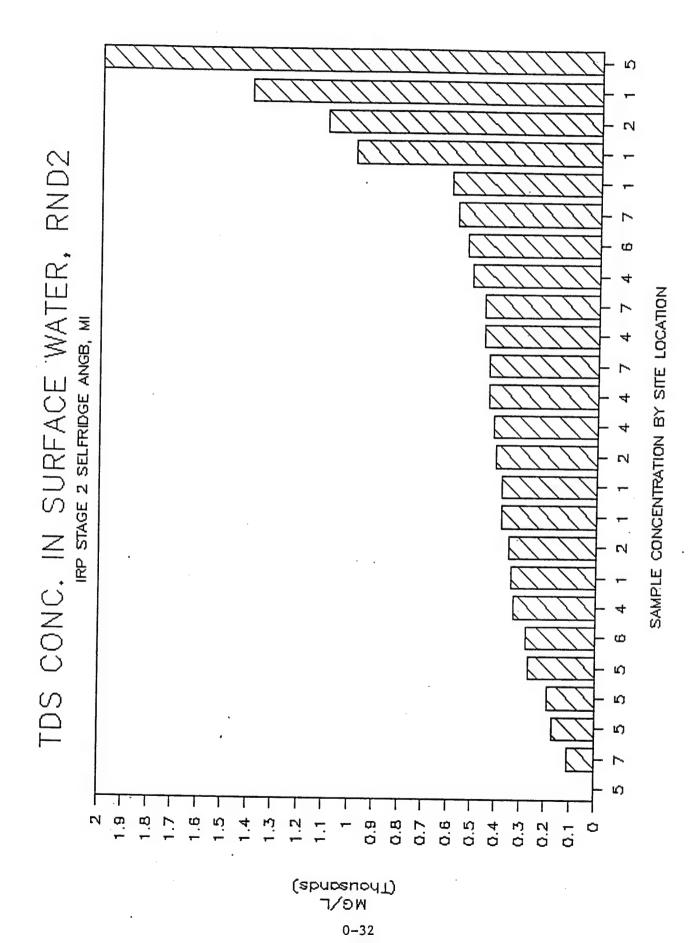
SULFATE CONC. IN SURFACE WATER, RND2 IRP STAGE 2 SELFRIDGE ANGB, MI



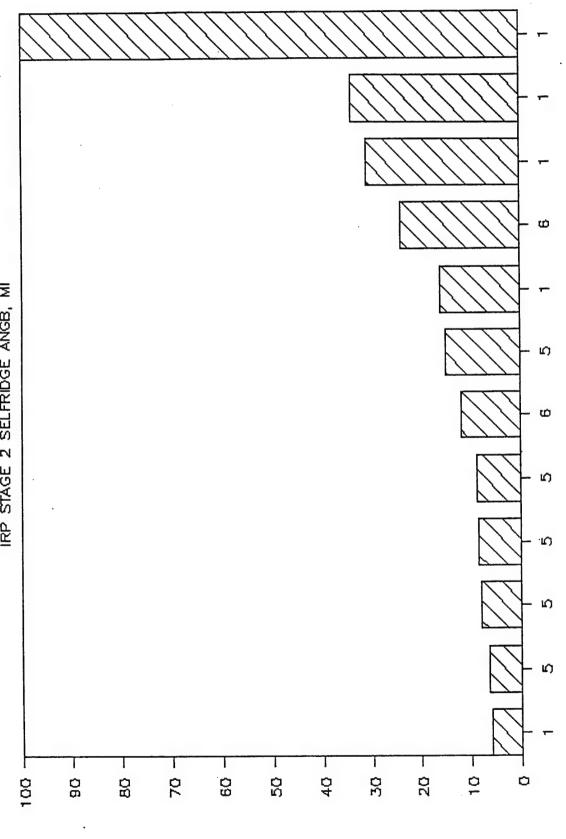
MG/L

0-31

SAMPLE CONCENTRATION BY SITE LOCATION



TOC CONC. IN SURFACE WATER, RND2 IRP STAGE 2 SELFRIDGE ANGB, MI

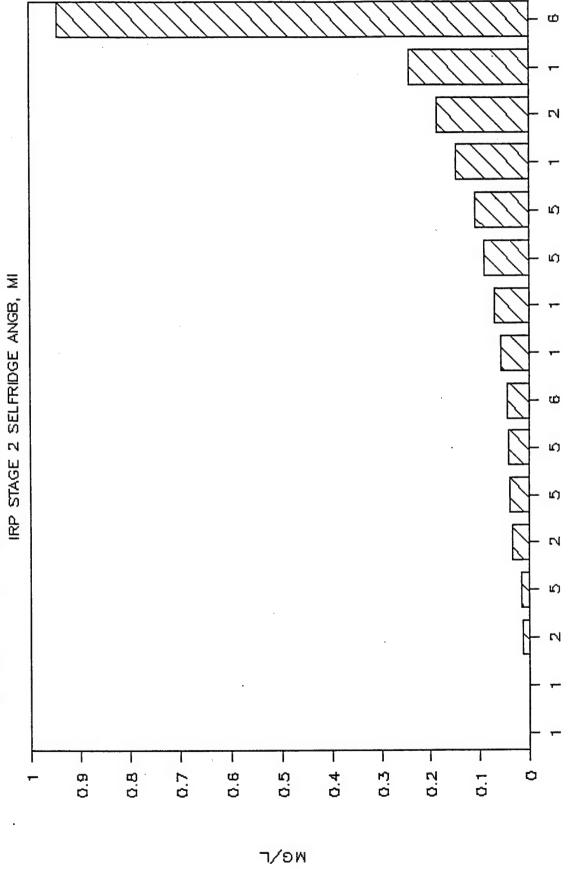


MG/L

0-33

SAMPLE CONCENTRATION BY SITE LOCATION

ZINC CONC. IN SURFACE WATER, RND2



0-34

SAMPLE CONCENTRATION BY SITE LOCATION



### APPENDIX P

### DEFENSE PRIORITY MODEL

# Southwest Landfill (SWLF) Defense Priority Model List of Comments Used to Justify Scoring

Item <u>Number</u>	Comment
1.	Several contaminants, such as trichlorofluor- methane, phenol, and petroleum hydrocarbons were detected in the surface water. Analytical results are valid. Score as 100.
11.	Use score of 1.0 for waste containment effective- ness because some waste is exposed at the surface and new waste is added to the site. Also the cover is not properly graded, low spots occur, and it is not in good condition. There are no measures for preventing run-on or controlling run-off. Contaminants were detected in surface water near the base of uncovered construction debris. The active area where demolition debris is being dumped is not covered daily. Ponding of surface water occurs on the landfill surface.
13.	The contaminants xylenes, vinyl chloride, trichloroethene, toluene, TCE, petroleum hydrocarbons were detected in the groundwater. These concentrations are above background. Score as 100.
21.	Assigned a score of 1.0 because contaminants have been detected in the groundwater, and the landfill does not have a liner. No groundwater cleanup has been performed. General lack of a physical contaminant systems at the site.
23-42	Scoring of these questions is based on calculated sums and logs shown on hazard tables detailing the contaminants detected at the SWLF.
43.	The Mt Clemens water intake is greater than three miles from the SWLF. Score as 0.
44.	Assign a score of 3 based on the city water intake being more than 3 miles away and that untreated untreated surface water runoff is pumped into the Clinton River. Also water fowl using surface water bodies and fish in the river could serve as pathways for contaminants.

- 45. Population within 1,000 feet of the site numbers approximately 26-100. The population consists mainly of ground maintenance personnel and workers in the warehouses to the west of the site. Score as 2.
- 46. Distance to newest installation boundary is approximately 450 feet. Score as 3.
- 47. Land use within one mile is predominantly residential. Score as 3.
- 50. Assign a score of 1 because untreated surface water is discharged into the Clinton River. Lake St. Clair is >3 miles downstream and will not be considered in scoring.
- 51. No known critical environments occur within 1 mile of the SWLF. Score as 0.
- No wells are known to be used for supplying water within 1 mile of the site. Wells to the SE of the SWLF would not be reached by contaminants because of slow groundwater velocities and the thick lacustrine clay deposit. The presence of upward gradients at the base would tend to prevent migration of contaminants to the screened interval. Score as 0.
- 55. No use of surface water occurs within 3 miles of site. Groundwater that would be intercepted by stormwater drainage line is discharged into the Clinton River but would not impact the drinking water source. Score as 0.
- 56. No groundwater is used from beneath or near the SWLF site. Wells within one mile of the site do not produce domestic drinking water. Score as 0.
- 57. No groundwater within one mile of the site is used by any of the local population. Water is supplied by the city treatment plant. No surface water used for drinking water within three miles of the site. Score as 0.
- 58. The population of residential and daytime base personnel within one mile of the site is approximately 26-100. This is based on the number

A0008 P-2

of people working in warehouses west of site and ground maintenance people accessing SWLF. Score as 2.

- Distance to the nearest installation boundary is less than 3,000 ft. Score as 3.
- 62. Groundwater flow at the site is to the east would be intercepted by agricultural drain tiles. Based on the fastest travel time it would take approximately 4 years to reach the tiles. Score as 3.
- Ontreated groundwater would be discharged by the stormwater drainage system into the Clinton River. The river would be effected, but not Lake St. Clair because it is more than 3 miles from the site. Score as 1.
- 64. No known critical environments occur within one mile of SWLF. Score as 0.

Note to Question #55 --

Based on a phone conversation with an employee at the Mt Clemens water treatment plant, there are no domestic wells in the area being used to supply drinking water. All homes are supplied water by the city.

Site identification: Southwest Landfill (Site 01) - SWLF

	FACE WATER PATHWAYS  erved releases	(c	ir	c.		Multiplier	Product (score x mult.)	Max. score
••	Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0		(		1	100	100
at	hway characteristics							
	Distance to nearest surface water	0	1	2	3	4		12
	Net precipitation	0	1	2	3	1	**********	3
	Surface erosion potential	0	1	2	3	4		12
	Rainfall intensity	0	1	2	3	4		12
•	Surface permeability	0	1	2	3	3		9
:	Sum of items 2 through 6							48
	Normalized score (multiply item 7 x 100/48)							
	Flooding potential	0	1	2	3	8		24
0.	Adjusted pathways score  If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100						100	
1.	Waste containment effectiveness factor (Table 2)						1.0	•
2	Final score for surface water pathways (multiply it	ec1	10	) :	c ite	m 11)	100	

#### COMMENTS ON SURFACE WATER PATHWAYS

All Comments are presented on the typed pages following the scoring sheets for the SWLF.

Prepared by Jon D. Checked by RHG 12/9/88

Site identification: SWLF

NDWAT	ER PATHWAYS					
<u>Obse</u>	rved releases		rcle ne)	Multiplier	Product (score x mult.)	Max.
13.	Have contaminants been detected in groundwater?  If yes, assign score of 100 and proceed to item 20.  If no, assign score of 0 and proceed to item 14.	0	100	1	100	100
Path	way characteristics					
14.	Depth to seasonal high groundwater from base of waste or contaminated zone	0 1	. 2 3	9		27
15.	Permeability of the unsaturated zone	0 1	. 2 3	5		15
16.	Infiltration potential	0 1	2 3	5		15
17.	Sum of items 14 through 16					57
18.	Normalized score (multiply item 17 x 100/57)					
19.	Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table		2 3	5		15
20.	Adjusted pathways score. If item 13 is 100, enter 1 If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.	.00.			100	
21.	Waste containment effectiveness factor (Table 5)				1.0	
!2.	Final score for groundwater pathways (multiply item	20 x	item 2	1)	100	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification:	57	N	L	F
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CONTAMINANT	HAZARD	SURFACE	WATER
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If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

		Score (circle one)	Result .	Logarithm (base 10)
23.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		82279	4.9
24.	Human health hazard score	0 1 2 4 6		
25.	Normalized human health hazard score (multiply item 24 x 100/6)		100	
26.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		220	2.3
27.	Ecological hazard score	0 1 2 3		
28.	Normalized ecological hazard score (multiply item 27 x 100/6)	4(5)6	<u>83.3</u> 33	1
29.	Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contami	nant:
30.	Normalized human health hazard score (multiply item 29 x $100/9$ )			
31.	Maximum ecological hazard index	0 1 2 4 6	Contami	nant:
32.	Normalized ecological hazard score (multiply item 31 x 100/6)			
	MINANT HAZARD GROUNDWATER			
If con	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 42	, complete it 2. Attach Ha	ems 33 thro	ugh 38. If contaminant
If con have n contar	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 40 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard	, complete it 2. Attach Ha	zard Worksh	eet or list of
If conhave no contar	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 40 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	2. Attach Ha	ems 33 throizard Worksh	ugh 38. If contaminant set or list of
If conhave nontar	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 42 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score	, complete it 2. Attach Ha	151997	eet or list of
If contart and a second are a s	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 40 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)	2. Attach Ha	zard Worksh	eet or list of
If contart and a second are a s	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 42 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score	2. Attach Ha	151997	eet or list of
If contart contart 33.	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 43 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of	2. Attach Ha 0 1 2 4 6	151997 100	5.1
If contar 33. 34. 35. 36.	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 42 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)	2. Attach Ha	151997 100	5.1
If contar 33.  34.  35.  36.	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 40 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)  Ecological hazard score	2. Attach Ha 0 1 2 4 6	151997  100  1854	5.1 3.2
If contar 33.  34.  35.  36.	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 42 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)  Ecological hazard score  Normalized ecological hazard score (multiply item 37 x 100/6)	0 1 2 4 6 0 1 2 3 4 5 6	151997  100  1854  100	5.1 3.2
If contar 33. 34. 35. 36. 37. 38. 39.	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 42 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)  Ecological hazard score  Normalized ecological hazard score (multiply item 37 x 100/6)  Maximum human health hazard index  Normalized human health hazard index	0 1 2 4 6 0 1 2 3 4 5 6	151997  100  1854  100	5.1 3.2

Site identification: SWLF

•	•	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
3.	Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	<b>0</b> 1 2 3	3	0	9
4.	Water use of nearest surface water body(ies)	0 123	3	6	9
5.	Population within 1000 ft (305 m) of the site	0 123	1	2	3
6.	Distance to the nearest installation boundary	0 1 2 3	1	3	3
7.	Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	3	3
8.	Sum of items 43 through 47			14	27
9.	Final score for human health receptors on surface water pathways (multiply item $48 \times 100/27$ )		51.852		
<b>CO</b> 1	OGICAL RECEPTORS SURFACE WATER PATHWAYS				
0.	Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	5	15
1.	Presence of "critical environments" within 1 mile (1.5 km) of the site	0 3	1	0	3
2.	Sum of items 50 and 51			5	18
3.	Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			27.778	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification:SWLF

HEA	LIH RECEPTORS GROUNDWATER PATHWAY	Score (circle one)	Multiplier	Product (score x mult.)
54.	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	①1 2 3	9	0
55.	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	0123	5	0
56.	Groundwater use of the uppermost aquifer	①1 2 3	4	0_
57.	Population potentially at risk from groundwater contamination	0 6 9 12 18 24 27 36	1	0
58.	Population within 1000 ft (305 m) of the site	0 123	1	2
59.	Distance to the nearest installation boundary	0 1 2 3	1	3
60.	Sum of items 54 through 59			5
61.	Final score for human health receptors on groundwater pathways (multiply item $60 \times 100/96$ )	•		5.208
XGICA	L RECEPTORS GROUNDWATER PATHWAYS			
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 2(3)	3	9_
63.	Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0(1)2 3	3	3
64.	Presence of "critical environments" within 1 mile (1.5 km) of the site	О 3	1	0
65.	Sum of items 62 through 64		•	_12_
	Final score for ecological receptors on groundwater pathways			57.143

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

#### Site identification:SWLF

#### SCORING SUMMARY SHEET

		Pa	thways scor	<u>e</u>	Contaminant hazard score	Rec	eptors sco	r e		Overall score
67.	Surface water/human health scores	(	100 item 12	x	100 item 25/30	x	51.852 item 49	)	/10,000 =	51.852
68.	Surface water/ecological scores	(	100 item 12	×	83.333 item 28/32	x	27.778 item 53	)	/10,000 =	23.056
69.	Groundwater/human health scores	(	100 item 22	×	100 item 35/40	<b>x</b> .	5.208 item 61	)	/10,000 =	5.208
70.	Groundwater/ecological scores	(	100 item 22	x	100 item 38/42	x	57.143 item 66	)	/10,000 =	57.143

#### OVERALL SITE SCORE:

71. 
$$(\frac{51.852}{\text{item }67})^2 \times 5 + (\frac{23.056}{\text{item }68})^2 \times 5 + (\frac{5.208}{\text{item }69})^2 \times 5 + (\frac{57.143}{\text{item }70})^2 = \frac{17375.666}{\text{item }70}$$

72. Overall site score = 
$$\sqrt{\frac{17375}{\text{item }71}} \cdot 666_{464} = \frac{38.053}{100} = 38$$

TABLE P-1
SWLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

THAIRTHAN	NOTIFIED TO A TION	V-1-1-1	ALL ALL ALL ALL ALL ALL ALL ALL ALL ALL	C K K C S K	
	io i cure	BENCHMARK	BENCHMARK	EFFECTS BENCHMARK	FACTOR
SWLF GROUNDWATER CONTAMINANT HAZARD	(ng/L)	(ug/day)	(ng/L)	(ng/L)	(L/KG)
ALUMINUM		3		2000	
ARSENIC	10	0.04	360	100	280
BARIUM	765	0.15	14500		7
BENZENE	09	30	5300		32
RITYI RENZYI PHTHAI ATE	2	10000	1700		099
	27	20	99.0		20
MIL MOORE	17	0.0	16	100	200
COBBEB			9.5	200	210
COFFER OF SENSENS	0	760	1120		069
DICHLOROBENZENE	60		2850		240
I CALLOROBENZENE	0 4		118000		14
DICHLORUE I MANE	650	•	135000		7.2
DICHLOROEINENE	0.00		11000		
	450	•	11000		120
DIETHYLPHTHALATE	091	=	2420		150
DIMETHYLPHENOL	98 98		00002		290
ETHYLBENZENE	26	,	0075	0003	100
IRON	00000/	001	004		300
LEAD	0227		450		700
MANGANESE METUVI ENE CHI ODIDE	310		193000		**
METATLENE CHLONIOL		280	2300		430
N.CKF.	87		1100	0 200	100
NITROPHENOL		0.7	8280	0	
PENTACHLOROPHENOL		280	55	5 37300	780
PET HYDRO (ASSUME JP-4)		13	28800	0	120
	2000	61.9			
	240	0089	10000	0	1.7
SILVER	14	20		2	
TETRACHLOROETHANE	7.3	10		0	7.
TETRACHLOROETHENE	3.9		5280	0	7
TOLUENE	059		17500	0	83
TRICHLOROETHENE	. 6.7	7	42000	·	
TRICHLOROFLUOROMETHANE		-	11000	0	
VINYL CHLORIDE	21	1000	M	0	7.2
XYLENES	210	) 16	13500		320
ZINC	105	10000	180	0 2000	1000
Col 7 = (col 2) x (2 L/day)	(0.0065 kg/day)				
9 = (col 7) + (col 8)					
\					
Col 11 = (col 2) / (col 4)					

	•	,	æ	٥	10	11	12
	THANTHOO	DRINKING	F000	TOTAL	HEALTH	AQUATIC	TERRESTRIAL
	NAME	WATER INTAKE	INTAKE	INTAKE	HAZARD	HAZARD	HAZARD
SWLF GROUND	SULF GROUNDWATER CONTAMINANT HAZARD	(ug/day)	(ug/day)	(ng/day)	QUOTIENT	QUOTIENT	QUOTIENT
	1 1 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0	0000	0.000	0.000	00000	0.0000
	ALUMINUM	20.00	18,2000	38.2000	955,0000	0.0278	0.1000
	AKSENIC	1530	19.8900	1549.8900	10332,6000	0.0528	0.000
	BAKIOM	120	12,4800	132,4800	4.4160	0.0113	0.000
	BENZENE BITTO DELITA DELLA ATE	7	8.5800	12,5800	0.0013	0.0012	0.000
	BUITLBENZTLPHIHALAIE	70	15.2750	109.2750	5.4638	71.2121	4.7000
	CADMIUM	7.2	22,1000	56,1000	3506.2500	1.0625	0.1700
	CHROMIUM	<b>.</b>	0.000	0.000	0.000	0000.0	0.000
•	COPPEX	, £	40.3650	58,3650	0.1269	0.0080	0.000
4,1	DICHLOROBENZENE	186	447.3300	633,3300	1.3768	0.0326	000000
-5,1	DICHLOROBENZENE	15. B	0.7189	16.5189	1,1013	0.0001	000000
-1,1	1,1- DICHLOKOEIRANE	1300	30.4200	1330,4200	511,7000	0.0048	000000
TRANS-1,2-	TRANS-1, Z- DICHLORDEIHENE	000	23.4000	923,4000	7.9603	0.0409	0.0000
	DICKLOKOFLUOKOME I MANE	120	124.8000	444.8000	0.0445	0.0031	00000
•	DIEINTLYNINALAIG	140	78.0000	238,0000	24.7917	0.0377	0.000
-6'7		187	173, 4200	357,4200	0.1625	0.0029	00000
	ETHYLBENZENE	17,00000	0000 000557	1855000.0000	12366.6667	1750.0000	140.0000
	IRON	00001	0.000	0.0000	0.000	0.000	0.000
	LEAD	0 12,50	17498 0000	30958,0000	123832,0000	19.2286	33.6500
	MANGANESE	02401	8 8660	628.8660	157.2165	0.0016	0.000
	METHYLENE CHLORIDE	079	0000	0.000	0.000	0000.0	0.000
	NAPHTHALENE	12,4	56 5500	230.5500	0.8867	0.0791	0.4350
•		*	0000	0,000	0.0000	0.000	0.000
- 7			0000 0	0.000	0.0000	00000	0.000
	PENTACHLOROPHENOL		0000	0.000	0.0000	0.000	0.0000
	PET HYDRO (ASSUME JP-4)	1001	0000	10000,0000	161.5509	0.000	0.000
	PET HYDRO (ASSUME MUICK UIL)		2 6520	482.6520	0.0710	0.0240	0.0000
	PHENOL	28	0.1820	28.1820	1.4091	11.6667	0000.0
		17. 4	6728 0	14.9749	1.4975	0.0008	0.000
1,1,2,2-	- TETRACHLOROETHANE	7.8	1.1154	8.9154	2,2289	0.0007	0.000
	TELKACALOROGIAENE	1300	350,6750	1650.6750	68.7781	0.0371	0.0000
	TOLOGNE TOLOGNETHENE	13.4	0.7404	14.1404	0.3367	0.0001	0.000
	TRICAL DOOR HORSE THANK	0	0.000	0.000	0.000	0.000	0.0000
	VINCE CHI OP IDE	75	0.9828	42.9828	0.0430	0.0001	0.0000
	VI ENES	420	436.8000	856.8000	53.5500	0.0156	0.0000
	AILENES	210	682.5000	892.5000	0.0893	0.5833	0.0525
	7177	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			120 1075
	$Col 7 = (col 2) \times (2 L/day)$		0,	SUMS =	151997,5191	1854.1555	117.101.
	8 = (col 2)	(0.0065 kg/day)	_	LOG OF SUMS =	5.1818	5.2681	1567.7
	6						
	10 = (col 9) /						
	=======================================						
	col 12 = (col 2) / (col 5)						

TABLE P-2
SULF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

SULF SURFACE LATER CONTINUANT CONCENTRATION HEALTH STREETS AND STREETS SHOCKHARK FACTOR (14/15)  ALIUNI HAM STRICE  ARIUNI HAM STRICE  BENZENE  BENZENE  BENZENE  BENZENE  LIGHTON TO STRICE  LIGHTON TO STRICE  LIGHTON TO STRICE  LIGHTON TO STRICE  LIGHTON TO STRICE  LIGHTON TO STRICE  LIGHTON TO STRICE  LIGHTON TO STRICE  AMANTHALE  LIGHTON TO STRICE  LIGHTON TO	HLF SURFACI	THAITTAINT		HEALIN EFFECTS	AUCALLO ELLECTA	TOTAL DESCRIPTION	FACTOR	
(ug/L) (ug/day) (ug/L) (ug/L) (Ug/L)  (ug/L) (ug/day) (ug/L) (ug/L) (Ug/day) (ug/L) (u	WLF SURFACT	CONTRACTOR OF THE PARTY OF THE	CONCENTRALION	BENCHMARK	BENCHMARK	EFFECIS BENCHMARA		
9270 3 5000 2 5000 518 0.04 4.5500 100 518 0.15 14500 100 518 0.15 14500 100 518 0.15 14500 100 522 0.016 1120 0.66 110 22 2.20 0.016 1120 0.66 110 2.20 0.016 1120 0.66 1100 2.6 1120 0.66 1100 2.6 1120 0.016 11000 2.6 1120 0.016 11000 2.6 1120 0.016 11000 2.0 11000 2.0 11000 2.0 10000 2.0 1.2 2.0 1.2 2.0 1.2 2.0 1.2 2.0 1.2 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2		HAME WATER CONTAMINANT HAZARD	(ng/L)	(ug/day)	(ng/L)	(ng/L)	(L/KG)	:
ACTION CONTRINENT   STATE   STATE   STATE	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	, , , , , , , , , , , , , , , , , , ,	0220	8		2000		
Mariantic   518	-	ALUMINUM	C2	70.0	39(		2	80
BENZIUM BENZIUM BENZIUM BENZIUM BENZIUM BENZIUM BENZIUM BENZIUM CORPER CHONILIN CHONOLINI CORPER CHONOLINI CORPER CHONOLINI CHONOGREIZEME DICHIOROGREIZEME DICH		ARSENIC	2,5	0.15	14500			4
BUTYLERENZER  BUTYLERENZER  COPPER  CHONOUGH CONCENTRAL TE  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  CONCENTRAL T  C		BARIUM		40	5300			32
CHICKENTYPHINALATE  CADMIUM  CHROWILLY  CHRO				0000	1200		9	09
CHECKHUM   20		BUTYLBENZYLPHTHALATE	• ;	00001	7			20
CONTINUED CONT		CADMIUM	99	7	5		•	2
COPPER   32		CHROMIUM	22	0.016	2		1 (	2 5
120   120		COODED	32	2000	6		<b>u</b> ,	2 9
10   11   11   11   11   11   11   11		COPPER		097	112	0	•	200
118000   1180000   1180000   1180000   1180000   1180000   1180000   1180000   1180000   11800000   11800000   1180000000000		DICHLOROBENZENE		U97	285	0	7	240
DICHLORGETHANE   2.6   135000		DICHLOROBENZENE		200	11800			14
DICHUGNOETHERE   1100   2210	1,1-	DICHLOROETHANE		2,5	10001		7	2
DICHLORGHUNGWETHANE  DICHLURGNETHANE  DIFFITYPENTIALATE  DIFFITYPENTIALATE  10000  27100  27100  27100  2700  2700  2700  34  5000  1500  1600  1700	RANS-1.2-	DICHLOROETHENE		5.6	00001	<b>-</b>	•	. «
10000   52100   52100   52100   52100   52100   52100   52100   52100   52100   52100   52100   5200		DICHLOROFLUOROMETHANE		116		<b>.</b>	•	2
Second State		DIETHYLPHTHALATE		10000		0	- •	2 2
PROPERTY	2,70	O THE THAT DHENO!		9.6		0	- (	200
ROW   150   400   5000   150	1417	DIRECT CONTRACT		2200				28
FROM   16   100   34   5000		EIHYLBENZENE	UU077					100
HANGAMESE   TSTO   TS		IRON	16				ויא	300
MAGANESE  MANGANESE  MANGANESE  MATTALLENE  MITKRUTHALENE  MITKRUTHALENE  MITKRUTHALENE  MITKRUTHALENE  MITKRUTHALENE  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHALONG  MITKRUTHAN		LEAD	07.37					
HETHYLENE CHLORIDE  HICKEL  HI		MANGANESE	0,0,0				7	4:4
Name		METHYLENE CHLORIDE	7		2	o <b>c</b>	7	430
NITCKEL  NITCKEL  NITCKEL  NITROPHENOL  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR DIL)  P		NAPHTHALENE	•				•	100
NITROPHENOL  12 0.7 0200  PENTACHLOROPHENOL  13 28800  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR DIL). 2400 61.9  PHENOL  SILVER  TETRACHLOROETHANE  TETRACHLOROETHANE  TRICHLOROETHANE  T		NICKEL	\$C .					
PENTACHICROPHENOL 7 280 555 57500 PET HYDRO (ASSUME JD-4) 2400 61.9 PET HYDRO (ASSUME MOTOR OIL) 2400 61.9 PHENOL 1.2 PHENOL 1.2 PHENOL 1.2 PHENOL 1.2 PHENOL 1.2 PET HYDRO (ASSUME MOTOR OIL) 2400 6800 1000 9320 TETRACHLOROETHANE 1.2 TETRACHLO	-7		12				•	780
PET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME MOTOR OIL) PET HYDRO (ASSUME MOTOR OIL) PHENOL SILVER TETRACHLOROFTHANE TETRACHLOROFTHANE TETRACHLOROFTHANE TETRACHLOROFTHANE TETRACHLOROFTHANE TETRACHLOROFTHANE TETRACHLOROFTHANE TRICHLOROFLUOROMETHANE TRICHLO	•		7					9 6
PET HYDRO (ASSUME MOTOR OIL) 2400 61.9 10000 9 6800 10000 9 1.2 20 1.2 20 1.2 20 1.2 20 1.2 20 1.2 20 1.2 20 1.2 20 1.2 20 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.				13		0		120
PHENOL SILVER SILVER SILVER TETRACHLOROETHANE TETRACHLOROETHANE TETRACHLOROETHANE TETRACHLOROETHENE TRICHCOROETHENE TRICHCOROETHENE TRICHCOROETHENE TRICHCOROETHENE TRICHCOROETHENE TRICHCOROETHENE TRICHCOROETHENE TRICHCOROETHANE TRICHCOROE								
SILVER						00		1.7
SILVER  SILVER  TETRACHLOROETHANE  TETRACHLOROETHANE  TETRACHLOROETHANE  TOLUGNE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROFLUNCOMETHANE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TOLUGN		FRENCE				2		~
TETRACHLORGE HANE TETRACHLORGE HANE TETRACHLORGE HANE TRICHLORGETHENE TRICHLOR		SILVER		· -		0		7.9
HENE  24 17500  NE  ROMETHANE 150 11 1000  E 1000 381000  2) x (2 L/day)  2) x (col 6) x (0.0065 kg/day)  7) + (col 8)  9) / (col 3)  2) x (col 4)	1,1,2,2-	TETRACHLOROET				: 5		77
## 150		TETRACHLOROETHENE						83
LOROETHENE  LOROFLUOROMETHANE  LOROFLUOROMETHANE  LOROFLUOROMETHANE  LOROFLUOROMETHANE  11 11000  381000  16 13500  180  2000  1  2000  2000  1  2000  2000  1  2000  20		TOLUENE				2 2		17
LOROFLUOROMETHANE 150 11 11000 CHLORIDE 1000 381000 ES 1440 10000 180 2000 1 7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x (0.0065 kg/day) 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 9) / (col 4) 12 = (col 4)		TRICHLOROETHENE				2 2		77
CHLORIDE 1000 581000  16 13500  15 13500  7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x (0.0065 kg/day) 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 9) / (col 4) 12 = (col 4)		TRICHLOROFLUOROMETHANE	150		•	00		
16		VINYL CHLORIDE		100	5	00		2 .
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x (0.0065 kg/day) 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)		XYI FINES		~	13		•	7
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)		ZINC	77					3
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)					1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		,
8 = (col 2) × (col 0) × 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)		$7 = (col \ 2) \times (2 \ L)$						
10 = (col /) + (col 10 + (col 11 = (col 2) / (col 11 = (col 2) / (col 12 + (		100) x (7 100) = 8	K (U.UUUJ Kg/day					
$10 = (col \ ?) \ / \ (col \ 11 = (col \ 2) \ / \ (col \ 2) \$		100) + (1100) = 6						
100) / (2 100) = 11		103) / (6 103) = 11						
		102) / (2 102) = []						

TABLE P-2 (CONTINUED)
SWLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

	CONTAMINANT		3				
	NAME	WATER INTAKE	INTAKE	INTAKE	HAZARD	HAZARD	HAZARD
LF SURFAC	SWLF SURFACE WATER CONTAMINANT HAZARD	(ug/day)	(ug/day)	(ug/day)	QUOTIENT	QUOTIENT	QUOI IENI
1 1 2 1 1 1	ALIMINIM	18540	00000	18540.0000	6180.0000	0.000	1.8540
	APSENIC	79	58.2400	122,2400	3056.0000	0.0889	0.3200
	BARITE	1036	13.4680	1049.4680	6996.4533	0.0357	0.000
	RENZENE	0	0.0000	0.0000	0.000	0000.0	0.000
	RUTY! BENZY! PHTHALATE	12	25,7400	37,7400	0.0038	0.0035	0.000
	CADMICM	132	21,4500	153.4500	7.6725	100.0000	9.6000
	MI MORE	55	28,6000	72.6000	4537.5000	1.3750	0.2200
	CORPER	79	43,6800	107,6800	0.0538	3.4783	0.1600
1 7-	OUT THE OBOBENZENE	0	0.0000	00000	0.0000	0.0000	0.000
, ,		0	0.000	0.000	0,0000	0.000	0.000
	OT CHI ORDETHANS	. 0	0.000	0.0000	0.0000	0.000	00000
	O I CHI ORDETHENE	0	0.000	0.0000	0.000	0.000	00000
	DICHIOROFILIOROMETHANE	0	0.000	0.000	0.000	0.000	0.000
	DIETHYLPHTHALATE	0	0.000	0.000	0.000	0.000	0.000
-7 6	DIMETHY! PHENO!	0	0.0000	0.000	00000	0.000	0.000
	FINTE	0	0.0000	0.000	0.000	0.000	0.000
	IRON	89800	29185,0000	118985.0000	793.2333	112.2500	8.9800
	LEAD	32	31.2000	63.2000	0.6320	0.470	0.0032
	MANGAVESE	15140	0.000	15140.0000	60560,0000	00000	1.5140
	METHYLENE CHLORIDE	7	0.0572	4.0572	1.0143	00000	0.000
	NAPHTHALENE	0	0.000	0.000	0.000	0.000	0.000
	NICKEL	106	34,4500	140.4500	0.5402	0.0482	0.2650
-7	NITROPHENOL	57	0.000	24.0000	34.2857	0.0014	0000
	PENTACHLOROPHENOL	14	35.4900	49.4900	0.1768	0.1273	0.0002
	PET HYDRO (ASSUME JP-4)	0	0000.0	0.000	0.000	0.000	0.000
	PET HYDRO (ASSUME MOTOR OIL)	4800	0.000	4800.0000	77.5444	0000	0.000
		18	0.0995	18,0995	0.0027	0.000	0.000
	SILVER	0	0.000	0.000	0000°0	00000	0.000
1122	TETRACHLOROETHANE	0	0.000	0000	0.000	0.000	0000.0
	TETRACHI ORDETHENE	0	0.0000	0.000	0.000	00000	0000.0
	TOLLIENE	0	0.0000	0000.0	0000 0	0.000	00000
	TOTCHLOOCETHENE	0	0,000	0.0000	0.000	0.000	0.000
	TO I CHI DODE! HOROMETHANE	300	72,1500	372.1500	33.8318	0.0136	0.000
	VINCIL CAL OBINE		0.000	00000	00000	0.000	0000.0
	VINIT CHECKING		0.000	0.000	00000	0,0000	0000.0
	ZINC	880	2860.0000	3740.0000	0.3740	2.4444	0.2200
					,044 OFCC0	0222 000	7721 00
	$7 = (col 2) \times (2 L/day)$		· .	0	02217.3100	6155.022	1 30.0
	Col $8 = (col 2) \times (col 6) \times (col 9) \times (col 9)$	(0.0065 kg/day)	_	LOG OF SUMS =	4.4	1040.7	
	10 = (col 9) /						

# Fire Training Area-2 (FTA-2) Defense Priority Model List of Comments Used to Justify Scoring

	·
Item <u>Number</u>	Comment
1.	Contaminants have been detected in the surface water. These include toluene, petroleum hydrocarbons, elevated metal concentrations and methylene chloride. Analytical results were above background. Score as 100.
11.	Surface effluent (fuels and water) are drained off the FTA-2 site into a wooded area. There is not an oil-water separator at the site. The FTA-2 consists of an earthen bern around the pit. Score as 1.
13.	Petroleum hydrocarbons were detected at elevated concentrations in the groundwater. Score as 100.
21.	The fire training area is unlined. Earthen material serves as the containment system. Score as 1.
23-42.	Scoring of these questions is based on calculated sums and logs presented on the hazard scoring tables detailing the contaminants detected at the FTA-2.
43.	No drinking water is obtained from surface water sources within three miles of the site. Therefore, no population would be affected. Score as 0.
44.	Surface water drains to the stormwater drainage system and is discharged to the Clinton River. It is greater than three miles from the discharge point to the public drinking water intake. Score as 2.
45.	Population is estimated to be 1-25. Population consists of fire fighters using the site, the base personnel using the engine test site, ground maintenance people working in area, and the police driving school using the old taxiway next to the site. These people are considered to be a daytime on-base population. Score as 1.
46.	Distance to nearest base boundary is approximately 800 feet. Score as 3.

P-14

8000A

Obs	erved releases  Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	(ci	rele (ne)	Multiplier 1	Product (score x mult.)	Max. score
Pat	hway characteristics					
2.	Distance to nearest surface water	0 1	2 3	4		12
3.	Net precipitation	0 1	2 3	1		3
4.	Surface erosion potential	0 1	2 3	4	•	12
5.	Rainfall intensity	0 1	123	4		12
6.	Surface permeability	0 1	123	3		9
7.	Sum of items 2 through 6					48
. 8.	Normalized score (multiply item 7 x 100/48)					
9.	Flooding potential	0	1 2 3	8		24
10	Adjusted pathways score  If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 10	0.			100	
11	. Waste containment effectiveness factor (Table 2)				1.0	
12	. Final score for surface water pathways (multiply i	tem	10 x it	em 11)	100	

#### COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the FTA-2

Prepared by m. Marche 9. Dec 88 Checked by RHG 12/4/88

Site identification: FTA-2

## GROUNDWATER PATHWAYS

Obs	erved_releases	Score (cire	cle	Multiplier	Product (score x mult.)	Max. score
13.	Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0	100	1	100	100
Pati	nway characteristics					
14.	Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2	2 3	9		27
15.	Permeability of the unsaturated zone	0 1 2	3	5		15
16.	Infiltration potential	0 1 2	3	5		15
17.	Sum of items 14 through 16					57
18.	Normalized score (multiply item 17 x 100/57)					
19.	Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table					
		0 1 2	3	5		15
20.	Adjusted pathways score. If item 13 is 100, enter 1 If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.	.00.				
21.					100	
	Waste containment effectiveness factor (Table 5)				1.0	
22.	Final score for groundwater pathways (multiply item	20 x it	em 21		100	

COMMENTS ON GROUNDWATER PATHWAYS

Site	identification	·FTA-	2

CONTAMINANT	HAZARD	SURFACE	WATER
COLUMN TIME	DAGARU.	- SURFACE	WATEN

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

		Score (circle	Result	Logarithm
23	3. Sum of human health hazard quotients (from column 10 of Hazard	one)		(base 10)
	Worksheet)	12	29 <u>98.20</u> 39	5 0000
24	. Human health hazard score			<u>5.089</u> 9
		0 1 2 4 (8	<b>5</b> )	
25	. Normalized human health hazard score (multiply item 24 x 100/5)		100	
26	Sum of ecological hazard quotients (enter the larger of the sums of			
	column 11 or 12 of Hazard Worksheet)		4.1181	2.0574
27	. Ecological hazard score	,		2:03/4
		0 1 2 3 4(5)6		
	. Normalized ecological hazard score (multiply item 27 x 100/5)	•	83.333	
20	Maying burned to the control of the			
43.	. Maximum human health hazard index	0 1 2 3 4		
20	V1/	56789	Contami	nant:
	Normalized human health hazard score (multiply item 29 x 100/9)			
31.	Maximum ecological hazard index	010/-		•
	$\cdot$	0 1 2 4 6	Contamin	mant:
	Normalized ecological hazard score (multiply item 31 x 100/6)			
ive r	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 4 minants, as appropriate.	), complete is 2. Attach Ha	tems 33 throu azard Workshe	gh 38. If cont et or list of
	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)			
		121	0 <u>7.659</u> 4	4.0831
34.	Human health hazard score	0 1 2 4(6)		
35.	Normalized human health hazard score (multiply item 34 x 100/6)	V 1 2 4(b)		
36	Sum of acales and acales (maitiply item 34 x 100/6)		100	
JU.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)			
	morksheet)		<u>2.389</u> 8	0.3784
	Ecological hazard score	0 1 2(3)		
38.	Normalized ecological hazard score (multiply item 37 x 100/5)	0 1 2 3	50	
			50	
39.	Maximum human health hazard index			
39.	Maximum human health hazard index	0 1 2 3 4		
	Hearti Hazard Index		Contamina	nt:
0.	Normalized human health hazard score (multiply item 39 x 100/9)	0 1 2 3 4	Contamina	nt:
0.	Hearti Hazard Index	0 1 2 3 4 5 6 7 8 9		
0.	Normalized human health hazard score (multiply item 39 x 100/9)	0 1 2 3 4	Contamina	

Site identification: FTA-2

HUMA	N HEALTH RECEPTORS SURFACE WATER PATHWAY	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
43.	Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	<b>0</b> 1 2 3	3	0	9
44.	Water use of nearest surface water body(ies)	0 123	3	6	9
45.	Population within 1000 ft (305 m) of the site	0(1)2 3	1	_1_	3
46.	Distance to the nearest installation boundary	0 1 2(3)	1	3	3
47.	Land use and/or zoning within 1 mile (1.5 km) of the site	0 1 23	1	3	3
48	Sum of items 43 through 47			<u>13</u> 2	27
49.	Final score for human health receptors on surface water pathways (multiply item $48 \times 100/27$ )		<u>48.14</u> 8		
ECOL	OGICAL RECEPTORS SURFACE WATER PATHWAYS				
50.	Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0(1)2 3	5		5
51.	Presence of "critical environments" within 1 mile (1.5 km) of the site	3	1	0	3
52.	Sum of items 50 and 51			51	8
53.	Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			27.778	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: FTA-2

HUMAN HE	ALTH RECEPTORS GROUNDWATER PATHWAY			
	<b>.</b>	Score (circle one)	Multiplier	Product Max. (score x score mult.)
54.	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	<b>0</b> 1 2 3	9	0 27
55.	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	<b>0</b> 1 2 3	5	015
56.	Groundwater use of the uppermost aquifer	<b>1</b> 2 3	4	012
57.	Population potentially at risk from groundwater contamination	06 9 12 18 24 27 36	1	0
58.	Population within 1000 ft (305 m) of the site	0(1)2 3	1	<u> </u>
59.	Distance to the nearest installation boundary	0 1 2(3)	1	3з
60.	Sum of items 54 through 59			4 96
61.	Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			4.167
ECOLOGICA	AL RECEPTORS GROUNDWATER PATHWAYS			
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 123	3	<u>6</u> 9
63.	Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 2 3	3	<u>3</u> 9
64.	Presence of "critical environments" within 1 mile (1.6 km) of the site	3	1.	з
65.	Sum of items 62 through 64			9 21
65.	Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			42.857

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

#### Site identification: FTA-2

#### SCORING SUMMARY SHEET

		Pa	thways score	Contaminant		ceptors score		Overall score
67.	Surface water/human health scores	(	100 item 12	100 item 25/30	x	48.148 )	/10,000 =	48.148
68.	Surface water/ecological scores	(	100 x	83.333 item 28/32	_	27.778 )	/10,000 =	23.148
69.	Groundwater/human health scores	(	100 x	100 item 35/40	x	4.167 ) / item 61	/10,000 =	4.167
70.	Groundwater/ecological scores	(	100 x	50 item 38/42	x	42.857 ) /	10,000 =	21.429

#### OVERALL SITE SCORE:

71. 
$$\left(\frac{48.148}{\text{item }67}\right)^2 \times 5 + \left(\frac{23.148}{\text{item }68}\right)^2 + \left(\frac{4.167}{\text{item }69}\right)^2 \times 5 + \left(\frac{21.429}{\text{item }70}\right)^2 = \frac{12672.999}{12872.999}$$

72. Overall site score 
$$\frac{\sqrt{12672.999}}{\text{item 71}}$$
 / 3.464 =  $\frac{32.498}{}$  = 32

TABLE P-3 (continued) FTA2 HAZARD WORKSHEET IRP STAGE 2 SELFRIDGE, MICHIGAN

Continuing   RAZARD   Cog/day   Co	CONTAMINANT NAME	7 DRINKING UATED INTAKE	8 FOOD INTAKE	OTAL TOTAL	10 HEALTH	AQUATIC	12 TERRESTRIAL
ARTHUR   ACCOUNTY	TAZ GROUNDWATER CONTAMINANT HAZARD	(ug/day)	(ug/day)	(ug/day)	QUOTIENT	QUOTIENT	QUOTIENT
Details   Deta	ALUMINUM	0	00000	0.000	0.000	0.000	0000
BANKIUN	ARSENIC	0	0.0000	0.000	0.000	0,000	0.000
BUTTLEENEZYPHTALATE 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	BARIUM	930	8.1900	638.1900	4254,6000	0.0217	0,000
BUTTLEEKZYLPHTHALATE 0 0.0000	BENZENE	0	0.000	0.0000	0.0000	00000	0.000
CHERNIUM COPPER CHEWILLIN CHEWILLIN COPPER CHEWILLIN COPPER CHEWILLIN COPPER CHEWILLIN COPPER CHEWILLIN COPPER CHEWILLIN COPPER CHEWILLIN COPPER CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHICLOGOERIAZEE CHEWILLIN CHEWI	BUTYLBENZYLPHTHALATE	0	0.0000	00000	0.0000	0.000	0.000
COPPER COPPE COPPER COPPER COPPE COPP	CADMIUM	0	0.000	0.0000	0.000	0.000	0.000
Color   Colo	CHROMIUM	0	0.000	0.000	0.000	0000.0	0.000
DICHLOROBENZENE   0 0,0000 0,0000 0,0000	COPPER	0	0.000	0.0000	0.000	0.0000	0.000
DICHICROCENTANE   0 0,0000 0		0	0.000	0.0000	0.000	0.000	0.000
DICHICROPETHANE		0	00000	0.0000	0.000	0.0000	0.0000
DICH ORDCTHURKE		0	0.000	0.000	0.000	0.0000	0.000
December   December		0	0.000	0.0000	0.000	0.0000	0.000
DIETHYLPHTMALATE  0 0,0000 0,0000 0,0000  1 00000 0,0000 0,0000  1 00000 0,0000  1 00000 0,0000  1 00000 0,0		0	0.000	0.000	0.000	0.000	0.000
DIMETHYLPHENOL	DIETHYLPHTHALATE	0	0.000	0.000	0000	0.0000	0.000
RAYLERNZENE   0 0.0000 0.0000		0	0.000	0.000	0000.0	0.000	0.000
TROW    298   96.8500   394.8500   2.6323   180W    180W    200000   0.000		0	0.000	0.000	00000	0.0000	0.000
MANGAMESE   0 0.0000   0.000	IRON	298	96.8500	394.8500	2.6323	0.3725	0.0298
MANGANESE         B30         1079,0000         1909,0000         7636,0000           MENTALENE CHLORIDE         0         0,0000	LEAD	0	0.000	0.000	0.000	0.000	0.000
HETHYLENE CHLORIDE 0 0.0000 0.	MANGANESE	830	1079.0000	1909,0000	7636.0000	1.1857	2.0750
NICKEL NICKEL NITROPHENOL NO 0.0000 NITROPHENOL NITROP	METHYLENE CHLORIDE	0	00000	0.000	0.000	0.000	0.000
NICKEL NICKEL NITROPHENOL  NITROPHENOL  O 0,0000  O 0,0000  O 0,0000  PET HYDRO (ASSUME MOTOR OIL)  O 0,0000  PET HYDRO (ASSUME MOTOR OIL)  O 0,0000  PHENOL  SILVER  SILVER  O 0,0000  O	NAPHTHALENE	0	0.000	0.000	0.000	0.000	0.000
NITROPHENOL  PENTACHLOROPHENOL  0 0,0000 0,0000 0,0000  PENTACHLOROPHENOL  PET HYDRO (ASSUME JD-4) 2000 780,0000 2780,0000 213.8462  PET HYDRO (ASSUME JD-4) 2000 780,0000 2.0000 0,0000  PHENOL  SILVER  SILVER  TETRACHLOROETHENE 0 0,0000 0,0000 0,0000  TETRACHLOROETHENE 0 0,0000 0,0000 0,0000  TRICHLOROETHENE 0,0000 0,0000 0,0000  TRICHLOROETHENE 0,0000 0,0000 0,0000  TRICHLOROETHENE 0,0000 0,0000 0,0000  TRICHLOROETHENE 0,0000 0,0000 0,0000  TRICHLOROETHENE 0,0000 0,0000 0,0000  TRICHLOROETHENE 0,0000 0,0000 0,0000  TRICHLOROETHENE 0,0000 0,00000  TRICHLOROETH	NICKEL	114	37.0500	151.0500	0.5810	0.0518	0.2850
PENTACHLOROPHENOL 0 0.0000 0.0000 0.0000 PET HYDRO (ASSUME JP-4) 2000 780.0000 2780.0000 2780.0000 213.8462 0.0000		0	0.000	0000.0	0.000	0.000	0.000
PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)  0 0.0000  0.0		0	0.000	0.000	0.0000	0.000	0.000
PHENOL  PHENOL  0 0.0000 0.0000 0.0000  PHENOL  SILVER  SILVER  SILVER  SILVER  O 0.0000 0.0000 0.0000  O 0.0000 0.0000  TETRACHLOROETHANE  O 0.0000 0.0000 0.0000  TOLUENE  TOLUENE  TRICHLOROETHENE  O 0.0000 0.0000  TRICHLOROETHANE  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.0000  TRICHLOROETHANE  O 0.0000 0.00000  TRICHLOROETHANE  O 0.0000 0.00000  TRICHLORO	PET HYDRO (ASSUME JP-4)	2000	780.0000	2780.0000	213.8462	0.0347	0.000
PHENOL  SILVER  SILVER  0 0.0000 0.0000 0.0000  TETRACHLOROETHANE  0 0.0000 0.0000 0.0000  TETRACHLOROETHANE  0 0.0000 0.0000 0.0000  TOLUENE  TRICHLOROETHENE  0 0.0000 0.0000 0.0000  TRICHLOROETHENE  0 0.0000 0.0000 0.0000  TRICHLOROETHENE  0 0.0000 0.0000 0.0000  TRICHLOROETHENE  0 0.0000 0.0000 0.0000  TRICHLOROETHENE  0 0.0000 0.0000 0.0000  TRICHLOROETHENE  0 0.0000 0.0000 0.0000  TRICHLOROETHENE  TRICHLOROETHENE  0 0.0000 0.0000  TRICHLOROETHENE  TRICHLOROETHENE  0 0.0000 0.0000  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  0 0.0000 0.0000  TRICHLOROETHENE  TRICHLOR	PET HYDRO (ASSUME MOTOR OIL)	0	0.000	0.0000	0.000	0.000	0000
SILVER  SILVER  SILVER  SILVER  D 0.0000 0.0000 0.0000  TETRACHLOROETHANE 0 0.0000 0.0000 0.0000  TETRACHLOROETHENE 0 0.0000 0.0000  TOLUGNE  TOLUGNE  TOLUGNE  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000 0.0000  TRICHLOROETHENE 0.0000 0.0000  TRICHLOROETHENE 0 0.0000  TRI	PHENOL	0	0.000	0000.0	0.000	0.000	0000.0
TETRACHLOROETHANE  0 0.0000 0.0000 0.0000  TETRACHLOROETHENE  0 0.0000 0.0000 0.0000  TOLUENE  TOLUENE  TOLUENE  TOLUENE  TRICHLOROETHENE  0 0.0000 0.0000  TRICHLOROETHENE  0 0.0000 0.0000  TRICHLOROMETHANE  0 0.0000 0.0000  TRICHLOROETHENE  TRICHLOROMETHANE  0 0.0000 0.0000  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  0 0.0000 0.0000  TRICHLOROETHENE  T		0	0.000	0.000	0.000	0.000	0000
ACHLOROETHENE 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000		0	0.000	0.000	0.000	0.000	0000.0
HUCROETHENE 0 0.0000 0.	JETRACHLOROETHENE	0	0.000	0.000	0.000	0.0000	0.000
CHORDETHENE   0 0.0000 0.0000 0.0000	TOLUENE	0	0.000	0.000	0000.0	0.000	0000.0
CRICORDETHANE	TRICHLOROETHENE	0	0,0000	0.000	0000.0	0.000	0.000
L CHLORIDE  C 0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  1.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  1.0000  0.00000  0.000000	TRICHLOROFLUOROMETHANE	0	0.000	0.000	00000	00000	0000
VES 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	VINYL CHLORIDE	0	0.000	0.000	0000	0.000	0000.0
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x (0.0065 kg/day) 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)	XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.000
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x (0.0065 kg/day) 9 = (col 7) + (col 8) 10 = (col 7) / (col 3) 11 = (col 2) / (col 3)	ZINC	0	0.000	000000	0.0000	0.000	0.000
$8 = (col \ 2) \times (col \ 6) \times (0.0065 \ kg/day)$ LOG OF SUMS = 4.0831 $9 = (col \ 7) + (col \ 8)$ $10 = (col \ 9) / (col \ 3)$	7 = (col 2) x	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3	= SWI	12107.6594	1.6665	2.3898
10 = (col 9) / 11 = (col 2) /	$8 = (col \ 2) \times 0 = (col \ 2$	$\overline{}$	7	SUMS	4.0831	0.2218	0.3784
11 = (col 2) /	10 = (col 9) /						
1 1 1021 - 11	Col 11 = (col 2) / (col 4)						

TABLE P-3 FTA2 HAZARD WORKSHEET IRP STAGE 2 SELFRIDGE, MICHIGAN

ATION	:	000	997	2	099	20	200	210	069	240	14	7.2	æ ç	021	2 6	100	300	007	4.4	430	100	ŝ	08/	120		: '	7 0	7,7	83	17	72	7.2	320	1000		•
6 BIOACCUMULATION FACTOR (L/KG)																																				
5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	0003	900	20			10	100	200								2000	2000	200		,	200		37300											2000		
4 AQUATIC EFFECTS BENCHMARK EFF (Ug/L)	* * * * * * * * * * * * * * * * * * *	072	14500	5300	1700	0.66	16	9.5	. 1120	2850	118000	135000	00011	2100	32000	700	34	350	193000	2300	1100	8280	66	28800	10000	1 2	0250	5280	17500	45000	11000	381000	13500	180		
3 HEALTH EFFECTS AQ BENCHMARK (ug/day)	* * **********************************	700	71.0	30	10000	20	0.016	2000	097	097	15	2.6	9000	9 %	2200	150	100	0.25	7	280	260	7.0	087	13	6800	0000	2 5	2 4	24	75	=	1000	16	10000		
2 CONCENTRATION (ug/L)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		315													149		415			25			0001											(0.0065 kg/day)	
1 CONTAMINANT NAME FTAZ GROJNDWATER CONTAMINANT HAZARD	Attistism	ADERIC	BABTIM	BENZENE	BUTYLBENZYLPHTHALATE	CADMIUM	CHROMIUM	COPPER	DICHLOROBENZENE	DICHLOROBENZENE	DICHLOROETHANE		DICHLOROFLUOROMETHANE	DIEINICPHINALAIE		IRON	LEAD		METHYLENE CHLORIDE	NAPHTHALENE				PET HYDRO (ASSUME JP-4) DET HYDRO (ASSUME MOTOR OTT)		STIVED		TETRACHLOROET	TOLUENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE	XYLENES	ZINC	7 = (col 2) x (2 L/ 8 = (col 2) x (col 9 = (col 7) + (col	Col 11 = (col 3) / (col 3) Col 11 = (col 2) / (col 4) Col 12 = (col 2) / (col 5)
FTA2 GROUNE									1,4-	1,3-	1,1	TRANS-1,2-		-7 6								-7					1122.	1								

TABLE P-4
FIA2 HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

6 BIOACCUMULATION FACTOR (L/KG)	280 4 32 660 50 200 210 690	7.2 120 150 290 100 300 4.4 430 100 120	7.9 44. 83 17 7.2 320 1000
5 TERRESTRIAL BIC EFFECTS BENCHMARK (ug/L)	5000 100 100 200	5000 5000 200 200 37300	. 2000
4 AQUATIC EFFECTS BENCHMARK E (Ug/L)	360 14500 5300 1700 0.66 16 9.2 1120 2850	118000 135000 11000 52100 32000 400 34 350 193000 2300 1100 8280 55	9320 5280 17500 45000 11000 13500 180
3 HEALTH EFFECTS BENCHMARK (ug/day)	30.04 0.15 30.15 10000 2000 2000 460 460	2.6 116 110000 9.6 2200 150 100 0.25 280 280 280 280 280 61.9 61.9	10 4 4 42 42 42 11 1000 16 10000
2 CONCENTRATION (ug/L)	9440 26 163 163 34	34800 170 6020 390 41	44 185 (0.0065 kg/day)
1 CONTAMINANT NAME CE WATER CONTAMINANT HAZARD	ALUMINUM ARSENIC BARIUM BENZENE BUTYLBENZYLPHTHALATE CADMIUM COPPER DICHLOROBENZENE DICHLOROBENZENE		TETRACHLOROETHANE  TETRACHLOROETHENE TOLUENE  TRICHLOROETHENE TRICHLOROETHENE XYLENES ZINC  COL 7 = (col 2) x (2 L/day) COL 8 = (col 2) x (col 6) x COL 9 = (col 2) x (col 6) x COL 11 = (col 2) x (col 8)
FTAZ SURFACE WATER	4. W	1,1- 2,4-	1,1,2,2-

TABLE P-4 (CONTINUED) FTA2 HAZARD WORKSHEET IRP STAGE 2 SELFRIDGE, MICHIGAN

	THE THE THOU	7	80 8	6	10	11	12
	NAME	WATER INTAKE	INTAKE	INTAKE	HA7ADA	HAZADO	LEKKESIKIAL UAZADD
FTA2 SURFAC	FTAZ SURFACE WATER CONTAMINANT HAZARD	(ng/day)	(ng/day)	(ng/day)	QUOTIENT	QUOTIENT	QUOTIENT
	ALUMINUM	18880	0.0000	18880.0000	6293.3333	0.000	1.8880
	ARSENIC	52	47.3200	99.3200	2483.0000	0.0722	0.2600
	BARIUM	326	4.2380	330,2380	2201.5867	0.0112	0.000
	BENZENE	0	0.000	0.000	0.000	0.000	0.000
	BUTYLBENZYLPHTHALATE	0	0.000	0000.0	0.000	0.000	0.000
	CADMIUM	0	0.000	0.000	00000	0.000	0.000
	CHROMIUM	0	0.000	000000	0.0000	0.000	0.0000
	COPPER	89	46.4100	114.4100	0.0572	3.6957	0.1700
1,4-		0	0.000	0.000	0.000	0.0000	0.000
1,3-		0	0.000	0.000	0.0000	0.000	0.000
1,1		0	0.000	0.0000	0.000	0.000	0.000
TRANS-1,2-	DICHLOROETHENE	0	00000	0.000	00000	0.000	000000
	DICHLOROFLUOROMETHANE	0	0.000	0000.0	0000	0.0000	0.000
		0	0.000	00000	0.000	0.000	0.000
5,4-		0	0.000	0.000	0.000	0.000	0.000
	ETHYLBENZENE	0	0.000	0.000	00000	0.000	0.000
	IRON	00969	22620.0000	92220.0000	614.8000	87.0000	9.9600
	LEAD	340	331,5000	671.5000	6.7150	2.0000	0.0340
	MANGANESE	12040	15652,0000	27692,0000	110768.0000	17.2000	30.1000
	METHYLENE CHLORIDE	780	11.1540	791.1540	197.7885	0.0020	0.0000
	NAPHTHALENE	0	0.000	0.0000	0.0000	0.000	0.0000
	NICKEL	82	26.6500	108.6500	0.4179	0.0373	0.2050
7	NI TROPHENOL	0	0.000	0.000	0000	0.0000	0.0000
	PENTACHLOROPHENOL	0	0.000	0.000	0.000	00000	0.0000
	PET HYDRO (ASSUME JP-4)	0007	1560.0000	5560.0000	427.6923	0.0694	0.000
	PET HYDRO (ASSUME MOTOR OIL)	0	0.000	0.000	0.000	0.000	0.0000
	PHENOL	0	0.000	0.000	00000	0.000	0.000
	SILVER	0	0.000	0.000	0.000	0.000	0.000
1,1,2,2-	TETRACHLOROETHANE	0	0.000	0.000	0.000	0000.	0.000
	TETRACHLOROETHENE	0	0.0000	0.000	0.0000	0.0000	0.000
	TOLUENE	88	23.7380	111.7380	4.6558	0.0025	0.000
	TRICHLOROETHENE	0	0.000	0.000	0.000	0.000	0.000
	TRICHLOROFLUOROMETHANE	0	0.000	0.000	0.000	0.0000	0.0000
	VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
	XYLENES.	0	0.0000	0.0000	000000	0.0000	0.000
	ZINC	370	1202.5000	1572.5000	0.1573	1.0278	0.0925
	Col 7 = (col 2) x (2 1/dav)	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		- SMI -	0200 900001	1011	2005 05
	8 = (col 2) × (col 6) ×	(0 0065 kg/day)	3 =	SMIS 30 301	6 0800	2 052/	1 5000
	9 = (col 7) + (col 8)	(Inc.) European	1		1.003	7.007	4966.1
	10 = (col 9) / (col						
	11 = (col 2) / (col						
	Col 12 = (col 2) / (col 5)						

# Fire Training Area-1 (FTA-1) Defense Priority Model List of Comments Used to Justify Scoring

Item

**A0008** 

Number	Comment
1.	No surface water samples were collected at this site. Score as 0 and proceed to questions #2-9.
2.	Closest surface water body is the Clinton River. It is located approximately 1 mile 950 feet to the south. Surface drainage from the site could flow in that direction via drainage ditches and empty into the river. Score as 3.
3.	Net precipitation: It was determined from base weather detachment records that the annual average precipitation received at the base is approximately 28.9 inches. Based on the DPM map the mean annual lake evaporation is 30 inches. Net precipitation would be -1.1 inches. Score as 1.
4.	Characterize soil erosion potential at site as slight. Slopes are less than 2%. The site is not in a depression so it would not be classified as a category one. No visible rills or gullies. Score as 1.
5.	Based on the DPM map, Figure 4, the 1-year 24-hour rainfall is approximately 2 inches for the Selfridge ANGB area. Score as 1.
6.	Estimated surface permeability is based on hydraulic conductivity values for the site. These values are in the range of 10 do 10 cm/sec. Estimate that soils are approximately 15-30% clay. Score as 1.
9.	The FTA-1 site and the base are not defined for flood potential on the insurance flood plain maps. Assume base is protected by dikes and embankments from flooding by Lake St. Clair or the Clinton River. Little to no flood potential. Score as 0.
11.	The former fire training area is covered, but may not be adequately covered. No runoff or runon provisions at the site. Runoff would not be collected and treated. Score as 1.

P-27

- 13. Contaminants were detected in the groundwater. Score as 100.
- 21. The FTA-1 area is covered, but not by an engineered cover. No runoff or runoff provisions at the site. No evidence that the site was cleaned up upon its abandonment. Score as 1.
- 23. No surface water samples were collected at this site. Therefore, proceed to answer questions #29-32 in order to score the surface water contaminant hazard.
- 29. Petroleum hydrocarbons are known to be found at the site based on past activity. They were used in fire training exercises and were also detected in the groundwater. The petroleum hydrocarbons human health benchmark equals 13. Log base 10 is 1. The bioaccumulation factor for petroleum hydrocarbons is 120. Log base 10 of this is 2.079. The score was determined from Table 6 in the DPM. Score as 3.
- Determined the ecological hazard index for petroleum hydrocarbons. The aquatic effects benchmark is 28,800 for petroleum hydrocarbons (assume JP-4). Log base 10 of 28,800 is 4.459. The score was determined from Table 7 in the DPM. Score as 1.
- 43. No drinking water is known to be obtained from groundwater or surface water sources within three miles of the site. The city water intake is greater than 3 miles from FTA-1. No surface water would be effected. Score as 0.
- Surface water use of Lake St. Clair and the Clinton River, the nearest surface water bodies, would be for fishing. Possible that water fowl living in these areas would be affected. The city water intake is more than three miles away. Score as 2.
- 45. Population within 1,000 ft. of site would be approximately 26 to 100. These include base people at the guard house by Joy Gate, buildings located north and south of site, ground maintenance people and security working around the site. This figure also included an estimate

of people working in warehouses west of the site. Score as 2.

- The distance to the nearest base boundary is approximately 600 ft. Score as 3.
- 47. Land use within one mile of site is dominantly residential with some commercial warehouses and light industry. Score as 3.
- The downslope area where surface water from the site would travel is the Clinton River. This is in the category of a permanent stream. Score as 1.
- No critical environments are known to occur within one mile of the site. Score as 0.
- No known wells are being used to supply groundwater within one mile of the site. Therefore, no contaminants from the site would be affecting a drinking water source. Also, upward gradients exist at base. Score as 0.
- Groundwater would not reach a surface water body in less than 100 years. Even if the stormwater system intercepted it, the time required is more than 100 years. The closest storm sewer in the direction of groundwater flow (NE) is approximately 1,800 feet away. Based on the calculated groundwater flow velocity, it would take more than 100 years to reach the storm sewer. Thus, no surface water would be effected in less than 100 years. Score as 0.
- No use of groundwater occurs at the FTA-1 site or within one mile. The city supplies drinking water to the based and the surrounding area. Score as 0.
- No known population would be affected because groundwater is not being used at the site or downgradient of it. Surface water is obtained for drinking at an intake greater than three miles from the site. This source would not be affected. Thus, no population is at risk. Score as 0.
- See question 45. Population is considered to be a daytime population. It is estimated to be approximately 26 to 100 people. Score as 2.

- Distance to nearest base boundary is approximately 600 feet. Score as 3.
- 62. See question 55. Based on the fastest travel time it would take more than 100 years. Score as 0.
- 63. The Clinton River would most likely receive any groundwater from the site. This would be groundwater intercepted by the storm drainage system and discharged to the river. Score as 1.
- No known critical environments occur within one mile of the site. Score as 0.

	•				
SU	RFACE WATER PATHWAYS			•	
	<i>:</i>	Score	Multiplier	Product	Max.
Ob:	served releases	(circle		(score x	score
-		one)		mult.)	
1.	Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	O 100	1	0	100
Pat	hway characteristics				
2.	Distance to nearest surface water	0 1 2(3)	4	12	12
3.	Net precipitation	0123	1	1	3
4.	Surface erosion potential	0 1 2 3	4	4	12
5.	Rainfall intensity	0123	4	4	12
6.	Surface permeability	0123	3	3	9
7.	Sum of items 2 through 6			24	48
8.	Normalized score (multiply item 7 x 100/48)			_50	
9.	Flooding potential	<b>0</b> 1 2 3	8	0	24
10.	Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100	٥.		50	
11.	Waste containment effectiveness factor (Table 2)			1.0	
12.	Final score for surface water pathways (multiply it	em 10 x ited	n 11)	_50_	

#### COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the FTA-1

Prepared by Con. D. Checked by RHG 12/9/88

Site identification: FTA-1

### GROUNDWATER PATEWAYS

Obse	erved releases	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
13.	Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 100	1	100	100
Path	way characteristics				
14.	Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9		27
15.	Permeability of the unsaturated zone	0 1 2 3	5		15
16.	Infiltration potential	0 1 2 3	5		15
17.	Sum of items 14 through 16				57
18.	Normalized score (multiply item 17 x 100/57)				
19.	Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table				
	£401e	0 1 2 3	5		15
20.	Adjusted pathways score. If item 13 is 100, enter 1 If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.	00.		_100	
21.	Waste containment effectiveness factor (Table 5)				
	Final score for groundwater pathways (multiply item	20 x item 2	1)	100	

COMMENTS ON GROUNDWATER PATHWAYS

CONTAMINANT	HAZARD	SURFACE	WATER
-------------	--------	---------	-------

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

		Score (circle	Result	Logarithm (base 10)
23.	. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	· · · · · · · · · · · · · · · · · · ·	0	
24.	. Human health hazard score	0 1 2 4 6		
25.	. Normalized human health hazard score (multiply item 24 x 100/6)			
26.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)	£		
27.	Ecological hazard score	0 1 2 3		
28.	Normalized ecological hazard score (multiply item 27 x 100/6)	4 5 5		•
29.	Maximum human health hazard index	0 1 2(3)4		
20	W	5 6 7 8 9	Contam	inant:Petroleum Hydro-
	Normalized human health hazard score (multiply item 29 x 100/9)		<u>33.33</u> 3	carbons
31.	Maximum ecological hazard index	0 1 2 4 6	Contami	nant: Petroleum Hydro
32.	Normalized ecological hazard score (multiply item 31 x 100/5)		<u>16.66</u> 7	carbons
				A
CONTAM	INANT HAZARD GROUNDWATER			
If connave n	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 4 minants, as appropriate.	), complete in 42. Attach H	tems 33 thro szard Worksh	ugh 38. If contaminants
33.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	798	7 <u>.0287</u>	3.9024
34.	Human health hazard score	0 1 2 4(6)		
35.	Normalized human health hazard score (multiply item 34 x 100/6)		100	
	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		2.5073	0.3992
37.	Ecological hazard score	0.1.2		<u>0.333</u> 2
38.	Normalized ecological hazard score (multiply item 37 x $100/6$ )	0 1 2(3) 4 5 6	50	
39.	Maximum human health hazard index	0 1 2 3 4		
40	Warrantin and a second	56789	Contami	nant:
	Normalized human health hazard score (multiply item 39 x 100/9)			
41.	Maximum ecological hazard index	0 1 2 4 6	Contamir	nant:
42.	Normalized ecological hazard score (multiply item 41 x 100/6)			

Site identification: FTA-1

HEALTH RECEPTORS SURFACE WATER PATHWAY	Score (circle one)	Multiplier	Product Max. (score x score mult.)
Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	①1 2 3	3	g
Water use of nearest surface water body(ies)	0 123	3	6g
Population within 1000 ft (305 m) of the site	0 123	1	<u>2</u> 3
Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u> 3
Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2(3)	1	<u>3</u> 3
Sum of items 43 through 47			14 27
Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)		<u>51.85</u> 2	
GICAL RECEPTORS SURFACE WATER PATHWAYS			
Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0(1)2 3	5	515
Presence of "critical environments" within 1 mile (1.5 km) of the site	3	1	3
Sum of items 50 and 51			5 18
Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			27.778
	Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream  Water use of nearest surface water body(ies)  Population within 1000 ft (305 m) of the site  Distance to the nearest installation boundary  Land use and/or zoning within 1 mile (1.6 km) of the site  Sum of items 43 through 47  Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)  GICAL RECEPTORS SURFACE WATER PATHWAYS  Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site  Presence of "critical environments" within 1 mile (1.5 km) of the site  Sum of items 50 and 51  Final score for ecological receptors on surface water pathways	Population that obtains drinking water from potentially effected one)  Population that obtains drinking water from potentially effected one of surface water body(ies) within 3 miles (4.8 km) downstream  Water use of nearest surface water body(ies) 0 123  Population within 1000 ft (305 m) of the site 0 123  Distance to the nearest installation boundary 0 1 23  Land use and/or zoning within 1 mile (1.6 km) of the site 0 1 23  Sum of items 43 through 47  Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)  GICAL RECEPTORS SURFACE WATER PATHWAYS  Importance/sensitivity of biots/habitats in potentially affected one of "critical environments" within 1 mile (1.6 km) of the one of the site of	Population that obtains drinking water from potentially affected one)  Population that obtains drinking water from potentially affected one of surface water body(ies) within 3 miles (4.8 km) downstream  Water use of nearest surface water body(ies) 0 123 3  Population within 1000 ft (305 m) of the site 0 123 1  Distance to the nearest installation boundary 0 1 23 1  Land use and/or zoning within 1 mile (1.6 km) of the site 0 1 23 1  Sum of items 43 through 47  Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)  SICAL RECEPTORS SURFACE WATER PATHWAYS  Limportance/sensitivity of biota/habitats in potentially affected one of "critical environments" within 1 mile (1.6 km) of the one of the site of "critical environments" within 1 mile (1.6 km) of the one of the site of the site of the site of the surface water pathways of the site of the site of the surface water pathways of the site of the surface water pathways of the site of the surface water pathways of the site of the surface water pathways

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: FTA-1

HUMAN HE	ALTH RECEPTORS GROUNDWATER PATHWAY			
		Score (circle one)	Multiplier	Product Max. (score x score mult.)
54.	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	<b>0</b> 1 2 3	9	027
55.	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	<b>1</b> 2 3	5	015
56.	Groundwater use of the uppermost aquifer	<b>0</b> 1 2 3	4	0 12
57.	Population potentially at risk from groundwater contamination .	06 9 12 18 24 27 36	1	<u> </u>
58.	Population within 1000 ft (305 m) of the site	0 123	1	2 з
59.	Distance to the nearest installation boundary	0 1 2(3)	1 .	33
60.	Sum of items 54 through 59			596
61.	Final score for human health receptors on groundwater pathways (multiply item 60 x 100/95)			5.208
ECOLOGICA	L RECEPTORS GROUNDWATER PATHWAYS			
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	<b>1</b> 2 3	3	g
63,	Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 2 3	3	
64.	Presence of "critical environments" within 1 mile (1.5 km) of the site	<u>о</u> з	1	з
65.	Sum of items 62 through 64			3 21
55.	Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			14.286

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

#### Site identification: FTA-1

#### SCORING SUMMARY SHEET

		Pa	thways score		Contaminant hazard score	Re	ceptors score		Overall score
67.	Surface water/human health scores	(	50 item 12	x	33.333 item 25/30	x	51.852 )	/10,000 =	8.642
68.	Surface water/ecological scores	(	50 2	x	16.667 item 28/32	x	27.778 )	/10,000 =	2.315
69.	Groundwater/human health scores	(	100 x	x	100 item 35/40	x	5.208 )	/10,000 =	5.208
70.	Groundwater/ecological scores	(	100 x	x	50 item 38/42	x	14.286 ,	/10,000 =	7.143

#### OVERALL SITE SCORE:

71. 
$$\left(\frac{8.642}{\text{item }67}\right)^2 \times 5 + \left(\frac{2.315}{\text{item }68}\right)^2 + \left(\frac{5.208}{\text{item }69}\right)^2 \times 5 + \left(\frac{7.143}{\text{item }70}\right)^2 = \frac{565.418}{}$$

72. Overall site score = 
$$\sqrt{\frac{565.41}{\text{item }71}}$$
8/ 3.464. =  $\frac{6.864}{}$  = 7

TABLE P-5 FTA1 HAZARD WORKSHEET IRP STAGE 2 SELFRIDGE, MICHIGAN

	CONTANT	CONCENTRATION	HEALTH EFFECTS	AQUATIC EFFECTS	TERRESTRIAL	BIOACCUMULATION
FTA1 GRO	NAME FTA1 GROUNDUATER CONTAMINANT HAZARD	(ng/L)	BENCHMARK (ug/day)	BENCHMARK (ug/L)	EFFECTS BENCHMARK (ug/L)	FACTOR (L/KG) ·
	ALUMINUM		٣	4 # # # # # # # # # # # # # # # # # # #	0005	
	ARSENIC		0.04	360		280
	BARIUM	89	0,15	14500		
	BENZENE		30	5300		2
	BUTYLBENZYLPHTHALATE		10000	1700		26
	CADMIUM		20	99-0	ç	99
	CHROMIUM		710 0	7,		
	COPPER		910.0	2 6		500
-	7- OTCHIODORENZENE		0007	7.6	200	210
-			00,	1120		069
	2 DICHLOROENZENE		094	2850		240
-1,	1 - DICHLORUE I HANE		15	118000		_
RANS-1,	2- DICHLOROETHENE		2.6	135000		7.2
	DICHLOROFLUOROMETHANE		116	11000		
			10000	52100		121
2,4-	*- DIMETHYLPHENOL		9.6	2120		031
			2200	23000		<u>.</u>
	IRON	675	0027	25000		067
	FAD	700	061	004		100
	MANGANEGE	273	20.0	**	2000	300
	AFTER CUI OF THE	3/5	0.0	950	200	007
	MADUTUAL ENG		7	193000		4.4
	מארחוחאנה אני		280	2300	,	43(
•			260	1100	200	100
4	4- NI IROPHENOL		0.7	8280		
	ENOL		280	55	37300	780
	SCIME	1000	13	28800		120
	PET HYDRO (ASSUME MOTOR OIL)		61.9			
	PHENOL		0089	10000		1.7
			20	1.2		•
1,1,2,2-	- TETRACHLOROETHANE		10	0320		7 0
	TETRACHLOROETHENE		7	5280		
	TOLUENE		76	17500		7 6
	TRICHLOROETHENE		67	00057		8
	TRICHLOROFILIOROMETHANS		7.	47000		
	VINCE CHI OBINE	•	- 66	00011		7.
	VINITIONIDE		1000	381000		7.2
	AILENES		16	13500		320
	ZINC .		10000	180	2000	1000
	Col 7 = (col 2) x (2 L/day) Col 8 = (col 2) x (col 6) x	(0.0065 kg/day)				4 1 2 3 4 0 1 1 1 1 1 1
	Col 9 = (col 7) + (col 8) $Col 10 = (col 9) / (col 3)$					
	11 = (col 2) / (col					

TABLE P-5 (continued)
FTA1 HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

FTA1 GROUNDU	1 CONTAMINANT NAME FTA1 GROUNDWATER CONTAMINANT HAZARD	7 DRINKING WATER INTAKE (ug/day)	8 FOOD INTAKE (ug/day)	9 TOTAL INTAKE (ug/day)	10 HEALTH HAZARD QUOT IENT	11 AQUATIC HAZARD QUOTIENT	12 TERRESTRIAL HAZARD QUOTIENT
V	ALUMINUM	0	0.0000	0.000	0.000	0.0000	0.0000
₹ 6	ARSENIC	0 71	0.0000	0.0000	0.0000	0.0000	0.000
o a	RENZENE	0	0.000	0.000	0.000	0.0000	0.0000
. 16	BUTYLBENZYLPHTHALATE	0	000000	0.000	0.000	0.000	0.000
Ü	CADMIUM	0	0.000	0.000	0.000	0.000	0.000
Ü	CHROMIUM	0	0.000	0.000	0.000	0.0000	0.0000
ũ	COPPER	0	000000	0.000	0.0000	00000	0.000
1,4- D	DICHLOROBENZENE	0	0.000	0.0000	0.0000	00000	0.0000
	DICHLOROBENZENE	0 6	00000	0.0000	0.000	0.000	0.000
1,1- D	DICHLORGE HANE	<b>&gt;</b> C	0000	0000	0000	0.000	0.000
	DICHLOROETHERE	0 0	0000.0	0.000	0.000	00000	0.0000
	DIETHYLPHTHALATE	. 0	0000 0	0,000	0,000	0.0000	0.000
2.4- 0	DIMETHYLPHENOL	0	0.0000	0.0000	0.000	0.000	0.000
	ETHYLBENZENE	0	0.000	0.000	0.000	0000.0	0.000
=	IRON	1124	365,3000	1489.3000	9.9287	1,4050	0.1124
ت	LEAD	0	0.000	0.000	0000*0	00000	000000
Ĩ	MANGANESE	744	967.2000	1711.2000	6844.8000	1.0629	1.8600
Ĭ	METHYLENE CHLORIDE	0	0.000	0.000	000000	000000	0.0000
Z	NAPHTHALENE	0	0.000	00000	0000	0.000	0.0000
Z	NICKEL	0	0.0000	00000	0.000	0.0000	00000
N - 7	NITROPHENOL	0	0.000	0.000	00000	0.000	0.0000
۵.	PENTACHLOROPHENOL	0	00000	0.0000	0.0000	0.0000	0.000
۵	PET HYDRO (ASSUME JP-4)	2000	780.0000	2780.0000	213.8462	0.0347	0.0000
۵.	PET HYDRO (ASSUME MOTOR OIL)	0	0000	00000	0.0000	0.0000	0.000
α.	PHENOL.	0	0.000	0.0000	0.000	0.000	0.0000
	SILVER	0	0.000	00000	0.0000	0000	0.0000
1,1,2,2-	TETRACHLOROETHANE	0	00000	0.0000	0.0000	0,000	0.0000
	TETRACHLOROETHENE .	0	0.0000	0,000	0.000	0.000	0.000
	TOLUENE	<b>o</b> (	0.0000	0.000	0.000	0,000	00000
_	TRICHLOROETHENE	o •	0.000	0.000	0.000	0,000	0000
-	TRICHLOROFLUOROMETHANE	<b>5</b>	0.000	0,000	0,000	0,000	0.000
>	VINYL CHLORIDE	0	0.0000	0.0000	00000	00000	0.0000
×	XYLENES	0	0.000	0.000	0000.0	0.000	00000
7	ZINC	0	0.000	0.000	0.000	0.000	0.000
, (	(2 1 /day)		15	SUMS =	7987,0282	2.5073	1.9724
, .	8 = (col 2) ×	(0.0065 kg/day)		= SMINS =	3.9024	0.3992	0.2950
	+ (2 103) = 6	day for control	í				
	10 = (col 9) / (col						
J	11 = (col 2) /					•	
٥	2) /						

## West Ramp (WRMP) Defense Priority Model List of Comments Used to Justify Scoring

Item	
Number	Comment
1.	Contaminants were detected in the surface water. These contaminants were petroleum hydrocarbons and 1,4-dichlorobenzene. Score as 100.
11.	The WRMP is the site of a fuel spill. Contaminants may possibly be exposed at the surface. There are no provisions for runoff control or treatment at the site. Surface water is removed from the site by the stormwater drainage system. This water may be contaminated. Score as 1.
13.	Contaminants have been detected in the groundwater. These contaminants include petroleum hydrocarbons and benzene. Score as 100.
21.	No provisions for containment or treatment of contaminated groundwater at the site. Score as 1.
23-42	Scoring of these questions is based on contaminants detected and the hazard scoring tables for the WRMP.
43.	No surface water within three miles of site is used as a drinking water source. The water intake for the city treatment plant is more than 3 miles away. Score as 0.
44.	Surface water is discharged by stormwater drainage system into Lake St. Clair. The public drinking water intake is more than three miles from the site and the point of surface water discharge to the lake. Score as 2.
45.	Population within 1,000 ft. of site is greater than 100. The population includes base personnel working at and around the site, ground maintenance personnel, and base security accessing the site. Score as 3.

- Distance to the nearest base boundary is approximately 1,300 ft. Score as 3.
- 47. Land use within one mile of the site is dominantly residential. Score as 3.
- 50. The closest surface water body that could receive surface water transported contaminants would be Lake St. Clair. This would occur via the stormwater drainage system. Score as 2.
- 51. No known critical environments occur within one mile of the site. Score as 0.
- No wells are known to be used for drinking water downgradient of the site. Water is supplied to local residents and the base by the city. Upward gradients exist at the base. Score as 0.
- Groundwater would be intercepted by the stormwater drainage system. The approximate groundwater travel time to interception is 5-20 years. However, there are no surface water intakes for public drinking water within three miles of the site. Score as 0.
- No known groundwater is being used beneath the site. No wells are known to produce drinking water because water is supplied by the city. Score as 0.
- 57. There is no groundwater being used beneath the site. No population uses groundwater from any area that could potentially be contaminated. Water is supplied by the city. Score as 0.
- A daytime population of more than 100 exists at the site. This population would consist of base personnel, maintenance personnel, and base security working at and around the site. Score as 3.
- Distance to nearest base boundary is approximately 1,300 ft. Score as 3.
- 62. Groundwater would be intercepted by stormwater drainage system. This would occur over a period of approximately 11 to 35 years. Score as 2.
- 63. Groundwater would be discharged to Lake St. Clair. The lake is located less than 3 miles

**8000A** 

downgradient from the site. The lake is a managed area for fishing. Score as 2.

No known critical environments occur within one mile of the site. Score as 0.

A0008 P-41

Site identification: West Ramp (Site 04) - WRMP

SURFACE WATER PATHWAYS				
Observed releases	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<ol> <li>Have contaminants been detected in surface water?         If yes, assign score of 100 and proceed to item 10.         If no, assign score of 0 and proceed to item 2.     </li> </ol>	0 . 100	1	100	100
Pathway characteristics				
2. Distance to nearest surface water	0 1 2 3	4		12
3. Net precipitation	0 1 2 3	1		3
4. Surface erosion potential	0 1 2 3	4		12
5. Rainfall intensity	0 1 2 3	4		12
5. Surface permeability	0 1 2 3	3		9
7. Sum of items 2 through 6				48
8. Normalized score (multiply item 7 x 100/48)				
9. Flooding potential	0 1 2 3	8		24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100	٠,		100	
11. Waste containment effectiveness factor (Table 2)			1.0	
12. Final score for surface water pathways (multiply it	em 10 x item	n 11)	100	

#### COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the WRMP

Prepared by Con D. Charles 9Da 88 Checked by Rug 12/9/88

Site identification: WRMP

### GROUNDWATER PATHWAYS

	•				
Obs	erved releases	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
13.	Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 100	1 .	100	100
Path	nway characteristics				
14.	Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9		27
15.	Permeability of the unsaturated zone	0 1 2 3	5		15
16.	Infiltration potential	0 1 2 3	5		15
17.	Sum of items 14 through 16				57
18.	Normalized score (multiply item 17 x 100/57)				
19.	Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table				
		0 1 2 3	5		15
20.	Adjusted pathways score. If item 13 is 100, enter 10 If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			100	
21.	Waste containment effectiveness factor (Table 5)			1.0	
22.	Final score for groundwater pathways (multiply item 2	20 x item 2	1)	100	

COMMENTS ON GROUNDWATER PATHWAYS

CONTAMINANT	HAZARD	SURFACE	WATER
-------------	--------	---------	-------

If contaminants have been detected	in surface v	water (score	of 100 in	item 1).	complete item	s 23 through 28	T#
contaminants have not been detected	(score of	0 in item 1)	. complete	items 29	through 32	Attach Hazand W.	, 44 
of contaminants, as appropriate.			,			NOTACH HEZATO MC	exsueet or 11st

		Score	Result Logarithm
22		(circle	(base 10)
23	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		42 <u>7.805</u> 1 <u>2.63</u> 12
24.	Human health hazard score	0 1 2 46	)
25.	Normalized human health hazard score (multiply item 24 x $100/6$ )		100
26.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		0.0766 -1.1158
27.	Ecological hazard score	0 2 3	
28.	Normalized ecological hazard score (multiply item 27 x 100/6)		16.667
29.	Maximum human health hazard index	0 1 2 3 4	
		56789	Contaminant:
	Normalized human health hazard score (multiply item 29 x 100/9)	•	
31.	Maximum ecological hazard index	0 1 2 4 6	Contaminant:
32.	Normalized ecological hazard score (multiply item 31 x 100/6)		
If con	AINANT HAZARD GROUNDWATER  Itaminants have been detected in groundwater (score of 100 in item 13),  not been detected (score of 0 in item 13), complete items 39 through 42  ninants, as appropriate.	, complete is 2. Attach Ha	tems 33 through 38. If contaminants azard Worksheet or list of
33.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		4 <u>27.83</u> 95 <u>2</u> .6313
34.	Human health hazard score	0 1 2 4(6)	
35.	Normalized human health hazard score (multiply item 34 x 100/6)		100
36.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		0.0698 -1.1560
37.	Ecological hazard score	0(1)2 3	
38.	Normalized ecological hazard score (multiply item 37 x 100/6)	4 5 6	<u>16.66</u> 7
	Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant:
40.	Normalized human health hazard score (multiply item 39 x $100/9$ )		
41.	Maximum ecological hazard index	0 1 2 4 6	Contaminant:
42.	Normalized ecological hazard score (multiply item 41 x 100/6)		

Site identification: WRMP

HUM	N WEALTH RECEPTORS SURFACE WATER PATHWAY	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
43.	Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	<b>1</b> 2 3	3	0	9
44.	Water use of nearest surface water body(ies)	0 123	3	_6	9
5.	Population within 1000 ft (305 m) of the site	0 1 2(3)	1	_3_	3
6.	Distance to the nearest installation boundary	0 1 2(3)	1	3	3
7.	Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2(3)	1	3	3
8.	Sum of items 43 through 47			15	27
9.	Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)		55.556		
:coi	OGICAL RECEPTORS SURFACE WATER PATEWAYS			· - W ·	
ю.	Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 123	5	10	15
1.	Presence of "critical environments" within 1 mile (1.6 km) of the site	<ol> <li>3</li> </ol>	1	0	3
2.	Sum of items 50 and 51			10	18

COMMENTS ON SURFACE WATER RECEPTORS

		Score (circle one)	Multiplier	Product (score x mult.)
54.	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	<b>0</b> 1 2 3	9	0
55.	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	①1 2 3	5	0
	Groundwater use of the uppermost aquifer	(O)1 2 3	4	0
57.	Population potentially at risk from groundwater contamination	06 9 12 18 24 27 36	1	0
58.	Population within 1000 ft (305 m) of the site	0 1 2(3)	1	3
59,	Distance to the nearest installation boundary	0 1 2(3)	1	3
60.	Sum of items 54 through 59		1	
61.	Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			6.25
OGICA	L RECEPTORS GROUNDWATER PATHWAYS			
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 123	3	6
63.	Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 123	3	6
64.	Presence of "critical environments" within a	<b>⊙</b> ₃	1	<u> </u>
65.	Sum of items 62 through 64			1.0
66.	Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			<u>12</u> 21 57.143

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

#### SCORING SUMMARY SHEET

		Pa	thways score	!	Contaminant hazard score		Receptors sc	ore		Overall score
67.	Surface water/human health scores	(	100 item 12	x	100 item 25/30	x	55.556 item 49	)	/10,000 =	5 <u>5.556</u>
58.	Surface water/ecological scores	(	100 item 12	x	16.667 item 28/32	x	55.556 item 53	)	/10,000 =	9.260
69.	Groundwater/human health scores	(	100 item 22	×	100 item 35/40	x	6.25 item 61	)	/10,000 =	6.25
70.	Groundwater/ecological scores	(	100 item 22	x	<u>16.667</u>	x	57.143	)	/10,000 =	9.524

#### OVERALL SITE SCORE:

71. 
$$\frac{55.556}{(\frac{1}{1000.67})^2 \times 5} + (\frac{9.260}{(\frac{1000.68}{1000.69})^2} + (\frac{6.25}{(\frac{1000.69}{1000.69})^2 \times 5} + (\frac{9.524}{(\frac{1000.70}{1000.70})^2} = \frac{15804.112}{(\frac{1000.69}{1000.69})^2 \times 5}$$

72. Overall site score 
$$\sqrt{\frac{15804.112}{\text{item }71}}$$
 / 3.464 =  $\frac{36.292}{\text{36}}$  = 36

TABLE P-6 WRMP HAZARD WORKSHEET IRP STAGE 2 SELFRIDGE, MICHIGAN

WRMP GROUN	1 CONTAMINANT NAME WRMP GROUNDUATER CONTAMINANT HAZARD	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUHULATION FACTOR (L/KG)
	ARSENIC	0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1	70.0	360	100	280
	BARIUM Benzene	2	0.15	14500		7 CE
	BUTYLBENZYLPHTHALATE	1	10000	1700		099
			20	99.0	10	20
	CHROMIUM .		0.016	16	100	200
	COPPER		2000	9.5	200	210
4,4	DICHLOROBENZENE		097	1120		069
-, -	DICHLOROBENZENE		400	118000		04/
TRANS-1,2-	DICHLOROETHENE		2.6	135000		7.2
	DICHLOROFLUOR		116	11000		80
			10000	52100		120
-5.4-			9.6	2120		150
	ETHYLBENZENE		2200	32000		290
	LEAD		100	34	2000	300
	METHYLENE CHLORIDE		7	193000		7-7
	NAPHTHALENE		280	2300		430
•			260	1100	500	100
-7	NITROPHENOL		0.7	8280		
	ENOL	6000	280	55	37300	780
	PET HYDRO (ASSUME JP-4)	0007	21 2	00887		07L
	SOME MOTOR		6800	10000		1 7
•	SILVER		20	1.2		
1,1,2,2-			10	9320		7.9
	TETRACHLOROET		7	. 5280		77
	TOLUENE		57	17500		83
	TRICHLOROETHENE		45	42000		17
	TRICHLOROFLUOROMETHANE		- :	11000		7.
	VINIL CHLUKIDE		1000	381000		7.7
	ATLENES		0100	00001		070
	LINC	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	00001	001	0007	0001
•	$7 = (col 2) \times (2 L)$					
	Col 8 = (col 2) x (col 6) x $\frac{1}{2}$	(0.0065 kg/day)		•		
	$9 = (col \ 7) + (col \ 10 = (col \ 9) / (col \ 10)$					
	11 = (col 2) / (col					
	Col 12 = (col 2) / (col 5)					

TABLE P-6 (continued)
WRMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

		•																																				
12 TERRESTRIAL HAZARD QUOTIENT	0.0000	0.000	0000	0.000	00000	0.000	00000	00000	00000	0000.0	00000	0000.0	00000	0.000	0.000	0000	00000	0.000	00000	0.000	0000.0	0.000	0.000	0.000	0000	0000.0	0000.0	0000	0.000	0.000	0.000	0.000	0000	FRR				
11 AQUATIC HAZARD QUOTIENT	0.0000	0.0000	0,000	0.0000	0.0000	0.0000	0.000	00000	0000	000000	0.000	0.000	0.000	0.000	0.000	0.000	00000	0000.0	0.000	0.000	0.0694	0.000	00000	0.000	0.000	0.000	0.000	0.0000	0.000	0.000	0000.0	0.0000	0.0698	-1.1560				
10 HEALTH HAZARD QUOTIENT	0.0000	0.0000	0.000	0.000	0.0000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	427.6923	0.000	0.000	0.000	0.0000	0.0000	0.000	0000.0	0.000	0000.0	0.000	0.0000	427.8395	2.6313				
9 TOTAL INTAKE (ug/day)	0.0000	4.4160	0,000	0.000	0.000	0.000	0.000	0.000	0000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5560.0000	0.0000	0.000	0.0000	0.0000	0.000	0.0000	0.000	0.0000	0.0000	0.000	0.000	SUMS =	OG OF SUMS =				
8 FOOD INTAKE (ug/day)	0.000	0.4160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	00000	0.0000	0.000	0.000	0.0000	1560.0000	0000.0	0.000	0.0000	0.0000	0.0000	0.0000	0000 0	00000	00000	00000	0.000	ns	97				
7 DRINKING WATER INTAKE (UG/dby)	00	4	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	7000	0	0	0	0	0	0	0	0	0	0	0		(0,0065 kg/day)		•		
CONTAMINANT NAME WRMP GROUNDWATER CONTAMINANT HAZARD	ARSENIC	BENZENE	BUTYLBENZYLPHTHALATE	CADMIUM	CHROMIUM	COPPER		- DICHLOROBENZENE	- DICHLOROETHANE	- DICHLOROETHENE	DICHLOROFLUOROMETHANE	_	_	ETHYLBENZENE	LEAD	METHYLENE CHLORIDE	NAPHTHALENE	NICKEL	4- NITROPHENOL	PENTACHLOROPHENOL	PET HYDRO (ASSUME JP-4)	PET HYDRO (ASSUME MOTOR OIL)	PHENOL		_	TETRACHLOROETHENE	TOLUENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE	XYLENES	ZINC	$Col 7 = (col 2) \times (2 L/dav)$	8 = (col 2) x	9 = (col 7) + (	6	11 = (col 2) / (col	col 12 = (col 2) / (col 5)
WRMP GROC							1,4	1,3-	1,1-0	TRANS-1,2			-7,4-						4						1,1,2,2-													

TABLE P-7
WRMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

CONTANINANT NAME NRMP SURFACE WATER CONTANINANT HAZARD	CONCENTRATION (ug/L)	HEALTH EFFECTS BENCHMARK (ug/day)	AQUATIC EFFECTS BENCHMARK (ug/L)	TERRESTRIAL EFFECTS BENCHMARK (ug/L)	BIOACCUMULATION FACTOR (L/KG)
ARSENIC		0.04	360	100	280
BARIUM		0.15	14500		
BENZENE		30	5300		
BUTYLBENZYLPHTHALATE	•	10000	1700	٠	
CADMIUM		20	99.0	10	, <b>L</b>
CHROMIUM		0.016	16		20
COPPER		2000	9.5	200	5
	80	097	1120		59
DICHLOROBENZ		097	2850		72
DICHLOROETHA		15	118000		•
TRANS-1,2- DICHLOROETHENE		2.6	135000		7
DICHLOROFLUOROMETHANE		116	11000		
		10000	52100		1,
2,4- DIMETHYLPHENOL		9.6	2120		15
ETHYLBENZENE		2200	32000		52
LEAD		100	34	2000	30
METHYLENE CHLORIDE		7	193000		4.
NAPHTHALENE		280	2300		. 430
		260	1100	200	10
4- NITROPHENOL		7.0	8280		
ENOL		280	55	37300	78
SUME JP-4)	2000	13	28800		120
PET NYDRO (ASSUME MOTOR OIL)		61.9			
PHENOL		0089	10000		1.7
SILVEK		07	1.2		2
		10	9320		7.9
I E I KACHLOKOE I HENE		7	2580		7
TOLUENE		54	17500		₩
TRICHLOROETHENE	•	75	42000		•
TRICHLOROFLUOROMETHANE		=	11000		7
VINYL CHLORIDE	•	1000	381000		7.2
XYLENES.		16	13500		32
ZINC		10000	180	2000	1000

Col 8 = (col 2) x (col 6) x (0.0065 kg/day) Col 9 = (col 7) + (col 8) Col 10 = (col 9) / (col 3) Col 11 = (col 2) / (col 4) Col 12 = (col 2) / (col 4)

TABLE P-7 (continued)
WRMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

RMP SURF	CONTAHINANT NAME WRMP SURFACE WATER CONTAHINANT HAZARD	7 DRINKING WATER INTAKE (Ug/day)	8 F000 INTAKE (ug/day)	9 TOTAL INTAKE (ug/day)	10 HEALTH HAZARD QUOTIENT	11 AQUATIC HAZARD QUOTIENT	12 TERRESTRIAL HAZARD QUOTIENT
	ARSENIC	0	0.0000	0.000	0,0000	0.000	0.000
	BARIUM	0	0.000	0.000	0.0000	0.000	00000
	BENZENE	0	0000	0.0000	00000	0.000	0.000
	BUTYLBENZYLPHTHALATE	0	0.000	0.000	0.000	0.000	0.000
	CADMIUM	0	0.000	0.000	0.000	0.0000	0.000
	CHROMIUM	0	0.000	0.000	0.000	0.000	0000
		0	0.000	0,000	0.000	0000-0	0.000
1,4-		16	35.8800	51,8800	0.1128	0.0071	0000-0
1,3-		0	0.0000	0,0000	00000	0.000	0.000
1,1-		0	0.0000	0.000	0,000	0.000	0,000
TRANS-1,2-		0	0.000	0.0000	0.000	0.0000	00000
	DICHLOROFLUOROMETHANE	0	0.000	0.000	0.000	0.0000	0000
		0	00000	0.000	0.000	0.000	0,000
-5.4-		0	0,000	00000	0.000	0.000	0000
	ETHYLBENZENE	0	0.0000	0.000	0.000	0.0000	0.000
	LEAD	0	0.000	00000	0.000	0.000	0.000
	METHYLENE CHLORIDE	0	00000	0.0000	0.000	0.000	0.000
	NAPHTHALENE	0	0.000	0.000	0.000	0000.0	0.000
•		0	0.000	0.000	0.000	0.000	0000
- 47		0	0.0000	0.0000	0.000	0.000	0.000
	PENIACHLOROPHENOL	0 (0)	0.0000	00000	0.000	0000.0	0.000
	PEI HYDRO (ASSUME JP-4)	0007	1560.0000	2560,0000	427.6923	0.0694	0.000
	PEI HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.000	0.000	0.000
	PHENOL	0	0.0000	0.0000	0.000	0.000	0.000
		o (	0.0000	0.0000	0.000	0.000	0.000
-2'2'1'1		0	0.0000	0.000	0.000	0.000	0,000
	TEL KACHLOROET HENE	<b>D</b> (	0.0000	0.0000	0.000	0.000	0.000
	TOLUENE	0	0.0000	0.0000	0.000	0.000	0.000
	I K I CHLOROE I HENE	0	0.0000	0.000	0.0000	0.000	0.000
	TRICHLOROFLUOROMETHANE	0	0.000	0.000	0.000	0.000	00000
	VINYL CHLORIDE	0	0.000	0.000	0.000	0.000	0.000
	XYLENES	0	00000	0.000	0.000	0.000	0.000
	ZINC	0	0.000	0.000	0.0000	0000.0	0.000
	$7 = (col 2) \times (2 L/day)$	4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	SMOS		427.8051	0.0766	0.0000
	× 6	(0.0065 kg/day)	ro.	LOG OF SUMS =	2.6312	-1.1158	ERR
	10 =						
	11 = (col 2) /						

### Tucker Creek Landfill (TCLF) Defense Priority Model List of Comments Used to Justify Scoring

Item <u>Number</u>	Comment
1.	Contaminants have been detected in the surface water at TCLF. Contaminants detected were petroleum hydrocarbons, trans-1,2-dichloroethene, butylbenzylphthalate and elevated metals were found. Score as 100.
11.	The TCLF is covered by earthen material, but is probably not an engineered clay cap. Flood control structures, such as the dike around the lake perimeter, are present. Runon and ponding of surface water does occur at the site. Surface water is removed from the site by the stormwater drainage system. Score as 0.5.
13.	Analyses of groundwater samples determined that contaminants do occur in samples from the monitor wells at the site. Contaminants detected include petroleum hydrocarbons, trichloroethene, methylene chloride, di-n-butylbenzene, bis(2- ethylhexyl)-phthalate, 1,4-dichlorobenzene, butylbenzylphthalate and elevated concentrations of metals. Score as 100.
21.	No provisions have been taken to clean up contamination at the site. No structures exist to contain these contaminants. Also, the TCLF does not have an engineered liner. No record of the use of any type of a liner at the site. Score as 1.
23-42.	Scoring of these questions is based on calculated sums and logs shown on hazard scoring tables detailing the contaminants detected at the site.
43.	Drinking water is not obtained from Lake St. Clair within three miles of the TCLF site. There are no known users within this area. Score as 0.

44.

The nearest surface water body is Lake St. Clair.

It is used for recreation and sport fishing. The city water plant intake is more than 3 miles from the site. Score as 2.

- Population within 1,000 ft. of the site is greater than 100. This population includes people at the school, base homes, and offices. Score as 3.
- Distance to the nearest base boundary is less than 10-20 ft. The boundary of the site is nearly coincident with the base boundary at the edge of Lake St. Clair. Score as 3.
- 47. Land use within one mile of the site is dominantly residential. There is also some commercial and light industry within this area. Score as 3.
- Surface water from the site is discharged untreated, directly into Lake St. Clair. The lake is immediately adjacent to the site. The lake serves as an area for fish spawning and feeding. The lake is also managed by local and/or state agencies. Score as 2.
- No known critical environments occur within one mile of the site. Score as 0.
- No wells within three miles of the site are known to supply drinking water. Water is supplied by the city to the base and area residents. Score as 0.
- 55. Groundwater is being intercepted by the stormwater drainage system based on monitor well water levels and potentiometric surface maps constructed using level data. Groundwater would intercepted in a 5 to 20 year period by the sewers. The storm water drainage discharges to Lake St. Clair. However, there are system no surface water inlets within three miles. Score as 0.
- No known use of water from the ground below the site occurs. Water is available from the city. There are no downgradient users of groundwater within 3 miles of the site. Score as 0.
- No population uses groundwater from site or within three miles of the site. Surface water in Lake St. Clair that could be contaminated by groundwater from the site would not affect any population using drinking water from the lake. This is because the drinking water intake for the City of Mt Clemens is more than three miles from the site. Score as 0.

- See question #45. Population within 1,000 ft. of site is greater than 100 people. Score as 3.
- Distance to the nearest base boundary is less than 10-20 feet. Site boundary is nearly coincident with the base boundary along Lake St. Clair. Score as 3.
- Groundwater is being intercepted by the stormwater 62. drainage system based on monitor well water levels and potentiometric surface maps constructed using Groundwater would data. level intercepted in a 5 to 20 year period by the storm water drainage The sewers. discharges to Lake St. Clair. However, there are no surface water inlets within three miles. Score as 0.
- 63. Lake St. Clair would receive any contaminated groundwater from the site. Score as 2.
- No known critical environments occur within one mile of the site. Score as 0.

Site identification: Tucker Creek Landfill (Site 05) - TCLF

SU	RFACE WATER PATHWAYS					
<u>Ob:</u>		(c	core ircle one)	Multiplier	Product (score x mult.)	Max. score
1.	Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0	100	1	100	100
Pat	hway characteristics					
2.	Distance to nearest surface water	0 :	2 3	4		12
3.	Net precipitation	0 1	2 3	1		3
4.	Surface erosion potential	0 1	. 2 3	4		12
5.	Rainfall intensity	0 1	2 3	4		12
٤.	Surface permeability	0 1	2 3	3		9
7.	Sum of items 2 through 6					48
8.	Normalized score (multiply item 7 x 100/48)					
9.	Flooding potential	0 1	2 3	8		24
10.	Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.				100	• .
11.	Waste containment effectiveness factor (Table 2)				0.5	
12.	Final score for surface water pathways (multiply ite	m 1	0 x ite	nm 11)	50	

#### COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the TCLF.

Prepared by Checked by RHG 12/9/88

GROUNDWATER	PATHWAYS
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	erved releases	(c	ore ircle one)	Multiplier	Product (score x mult.)	Max.
	Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20 If no, assign score of 0 and proceed to item 14.	0	100	1	100	100
Pat	hway characteristics			٠		
14.	Depth to seasonal high groundwater from base of waste or contaminated zone	0 1	. 2 3	9		
15.	Permeability of the unsaturated zone		2 3	5		27 15
16.	Infiltration potential	0 1	2 3	5		
17.	Sum of items 14 through 16					15
18.	Normalized score (multiply item 17 x 100/57)			•		57
	Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table			•		
,		0 1	2 3	5	· ·	15
20.	Adjusted pathways score. If item 13 is 100, enter 1 If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.	100.				
21.	Waste containment effectiveness factor (Table 5)			_	100	,
	Final score for groundwater pathways (multiply item	20 x ;	it <b>e</b> m 21)	_	1.0	

COMMENTS ON GROUNDWATER PATHWAYS

CONT	AMINANT HAZARD SURFACE WATER				•
	•				
	ontaminants have been detected in surface water (score of 100 in item aminants have not been detected (score of 0 in item 1), complete items ontaminants, as appropriate.	1), complete : 29 through 3:	items 23 thr 2. Attach E	rough 28. If Mazard Worksheet or	list
		Score (circle	Result	Logarithm (base 10)	
23	. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	one) 44	9 <u>75<b>.</b> 99</u> 84	4.6530	
24.	. Human health hazard score	0 1 2 4(6)			
25.	. Normalized human health hazard score (multiply item 24 x 100/6)	Ŭ	100		
26.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)	4	5.1153	1.6543	
27.	Ecological hazard score	0_1 2 3			
28.	Normalized ecological hazard score (multiply item 27 x 100/6)	<b>4</b> )5 5	<u>66.66</u> 7		
29.	Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contami	nant:	
30.	Normalized human health hazard score (multiply item 29 x $100/9$ )				**
31.	Maximum ecological hazard index	0 1 2 4 6	Contamir	nant:	
32.	Normalized ecological hazard score (multiply item 31 x 100/6)		-		<del></del>
ONTA	MINANT HAZARD GROUNDWATER				·
f con ave m	ntaminants have been detected in groundwater (score of 100 in item 13) not been detected (score of 0 in item 13), complete items 39 through 4 minants, as appropriate.	, complete ito 2. Attach Ha:	ems 33 throu zard Workshe	igh 38. If contamin	ants
33.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	51	8 <u>07.7</u> 911	4.7144	
34.	Human health hazard score	0 1 2 4 6			
35.	Normalized human health hazard score (multiply item 34 x 100/6)		100	•	
36.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)	1	9.5634	1.2914	
37.	Ecological hazard score	0_1 2 3			
38.	Normalized ecological hazard score (multiply item 37 x 100/6)	(4)5 6	66.667		
39.	Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contamin	ant.	
40.	Normalized human health hazard score (multiply item 39 x 100/9)				
41.	Maximum ecological hazard index	0 1 2 4 6	Contamin	ant.	
42.	Normalized ecological hazard score (multiply item 41 x 100/6)		CONCENTR	ant;	

	•	Score	Multiplier	Product	Max.
		(circle one)		(score x mult.)	score
	Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	①1 2 3	3		9
4.	Water use of nearest surface water body(ies)	0 123	3	6	9
5.	Population within 1000 ft (305 m) of the site	0 1 2(3)	1	3	3
6.	Distance to the nearest installation boundary	0 1 2(3)	1	3	3
7.	Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	3	3
8.	Sum of items 43 through 47			<u>15</u>	27
9.	Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)		5 <u>5.556</u>		
ΣΩL	OGICAL RECEPTORS SURFACE WATER PATHWAYS				,
0.	Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 123	5	_101	15
1.	Presence of "critical environments" within 1 mile (1.6 km) of the site	3	i	0	3
2.	Sum of items 50 and 51			<u>10</u> 1	.8
	Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			55.556	

COMMENTS ON SURFACE WATER RECEPTORS

HUMAN H	EALTH RECEPTORS GROUNDWATER PATHWAY			
	<i>:</i>	Score (circle one)	Multiplier	Product Max. (score x score mult.)
54 .	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	①1 2 3	9	027
55.	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	<b>0</b> 1 2 3	5	0 15
56.	Groundwater use of the uppermost aquifer	①1 2 3	4	0 12
57.	Population potentially at risk from groundwater contamination	06 9 12 18 24 27 36	1	0 36
58.	Population within 1000 ft (305 m) of the site	0 1 2(3)	1	2 .
59.	Distance to the nearest installation boundary	0 1 2(3)	1	33
60.	Sum of items 54 through 59		•	33
61.	Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			6.25
ECOLOGICA	AL RECEPTORS GROUNDWATER PATHWAYS			
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 123	3	<u>6</u> 9
63.	Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 123	3	6_ g
64.	Presence of "critical environments" within 1 mile (1.6 km) of the site	3	1	<u> </u>
65.	Sum of items 62 through 64			1221
66.	Final score for ecological receptors on groundwater pathways (multiply item $55 \times 100/21$ )			<u>12</u> 21 57.143

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification:

TCLF

#### SCORING SUMMARY SHEET

		Pa	thways score		Contaminant hazard score	Re	ceptors score		Overall score
67.	Surface water/human health scores	(	50 item 12	x	100 item 25/30	x	55.556 )	/10,000 =	27.778
68.	Surface water/ecological scores	(	50 item 12	ĸ	66.667 item 28/32	x	55.556 ) item 53	/10,000 ~	18.519
69.	Groundwater/human health scores	(	100 item 22	ĸ	100 item 35/40	x	6.25 )	/10,000 =	6.25
70.	Groundwater/ecological scores	(	100 item 22	c	66.667	x	57.143 ,	/10,000 =	38.096

#### OVERALL SITE SCORE:

71. 
$$(\frac{27.778}{\text{item }67})^2 \times 5 + (\frac{18.519}{\text{item }68})^2 + (\frac{6.25}{\text{item }69})^2 \times 5 + (\frac{38.096}{\text{item }70})^2 = \frac{5847.657}{}$$

72. Overall site score = 
$$\sqrt{\frac{5847.65}{548.65}}$$
 3.464 =  $\frac{22.075}{100}$  = 22

TABLE P-8
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

CLF GROU	CONTAMINANT NAME TCLF GROUNDWATER CONTAMINANT HAZARD	CONCENTRATION (ug/L)	HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)	<u>8</u>
	ALUMINUM		3 0.04	360	5000		- 280
	BAKIUM	929	0.15	14500		i	4
	BIS(2-ETHYLHEXYL)PHTHALATE	V 4	30	5300			32
	BUTYLBENZYLPHTHALATE	-	0001	002		M	310
	CADMIUM	- 60	2000	00/-		8	9 2
	CHROMIUM		910 0	0.00			20
	COPPER	30	2002	0 0	001	× ×	8
1,4-	DICHLOROBENZE	2	097	1120		2 3	210
٠,۲	- DICHLOROBENZENE	1	760	2850		6 6	2 5
-1,1	) I CHLOROETHAN		5	118000		•	⊋ ≥
ANS-1,2	) I CHLOROE THEN	,	2.6	135000		7	7.2
	JICHLOROFLUOR		116	11000			. 60
2 4-	DIEINTLYNINALAIE		10000	52100		12	20
į		•	9.6	2120		#	20
	FIN'S RENTENDACATE	7	10000	076		<b></b>	8
	IRON	87	2200	32000		52	8
	LEAD	3	100	007	2000	¥ ;	9
	MANGANESE	1790	25.0	75.0	0000	S ;	300
	METHYLENE CHLORIDE	~	4	1070701	002	<b>7</b>	004
	NAPHTHALENE		280	2300		7	4.4
•		22	560	1100	200	7 -	100
-4			7.0	8280		2	2
			280	55	37300	78	780
			13	28800		12	120
	PEI HYDRO (ASSUME MOTOR OIL)	4100	61.9			!	ì
	SII VEB		0089	10000		-	٧.
1 1 2 2.	TETBACUI ODOCT		50	1.2			7
,,,,,,,			10	. 9320		7.	4.9
	TOLLIENE		4 7	5280		7	77
	TRICHLOROFTHENE	1 7	4 (	17500		∞ .	23
	TRICHLOROFLUOROMETHANE	;	11	42000		1	_:
	VINYL CHLORIDE		1001	281000		` ,	<b>3</b> (
	XYLENES		16	13500		2.7	۷ ج
	ZINC	25	10000	180	2000	1001	3 5
	7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x 9 = (col 7) + (col 8)	(0.0065 kg/day)					: :
	202						
	100) / (7 100) = 71						

TABLE P-8 (continued)
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

| 000                           | 000                                      | 000   | 000  | 000  | 000  | 000  | 900   
  |  | 00  | 000  | 8  | 000  | 3 5  
   | 80   | 36       | 00  | 0.6                                | 3 8  | 2 2                  | 20  | 00   
   | 00 5   | 3 5  | 2 2  | 20   | 0   
  | 0 9  | 2 9  | 2 9  | 0   | <u>د</u> :  
  | - (  | <b>-</b>   |
|-------------------------------|--|---|--|--|--|--
--|--|---|--|--
--	--	--	----------	---	------------------------------------
--	--	--	--		
--	--	---	--		
--	--				
0.0	000	0.0	0.0	0.0	æ. 0
  | 20.0   | 0.0   | 0.00   | 0.00   | 0.0  |  
   | 0.00   | 0.01     | 0.00  | 8.95                               |  | 0.27                 | 0.00  | 00.0   
   | 00.0   | 00.0   | 0.00   | 00.00  | 0.00  
  | 0.000  | 0.00   | 0.00   | 0.00  | 0.012   
  | 10.351   | 0.0150   |
| 0.000                         | 0.0641                                   | 0.0004  | 0.0250   | 0.0006   | 12.1212  | 06/8.1   | 0.0000  
  | 0.000  | 0000.0  | 0.000  | 0,000  | 0.000  | 0.0021   
   | 0.000  | 0.1700   | 0.0000  | 5.1143                             | 0.0000   | 0.0500               | 0.000   | 0.0000   
   | 0.000  | 0.000  | 0.0000   | 0.000  | 0.0000  
  | 0.000  | 0000   | 0.0000   | 0.000   | 0.1389  
  | 19.5634  | 41.53.1  |
| 0.0000                        | 12547.6933                               | 0.1472  | 0.0161   | 0.0000   | 6187 5000  | 0000   | 0.0282  
  | 0.000  | 0.000   | 0.0000   | 0000   | 0.000  | 0.0005   
   | 0.000  | 1.2013   | 0000.0  | 1,0163                             | 0.0000   | 0.5606               | 0.000   | 0.0000   
   | 132 4717   | 0000   | 0.0000   | 0.0000   | 0.000   
  | 0.2060   | 0.000  | 0.0000   | 0.0000  | 0.0213  
  | 51807.7911   |  |
| 0.0000                        | 1882.1540                                | 4.4160  | 6 2000   | 18.6000  | 99.000   | ERR  | 12.9700   
  | 0.000  | 0.0000  | 0.000  | 0.0000   | 0.000  | 5.1570   
   | 0.0000   | 180.2000 | 8234, 0000  | 4.0572                             | 0.000  | 145.7500             | 0000 0  | 0.000  
   | 8200,0000  | 0.0000   | 0.000  | 0,000  | 0000  
  | 8.6530   | 0.000  | 0.0000   | 0.0000  |   
  | ns =<br>3 OF SUMS =  |  |
| 0.0000                        | 24.1540                                  | 8.0600  | 4.2900   | 2.6000   | 39.0000  | ERR  | 8.9700  
  | 0.0000   | 0000  | 0.000  | 0.000  | 0.0000   | 1.1570   
   | 0.0000   | 00000    | 4654,0000   | 0.0572                             | 0.0000   | 35.7500              | 0,000   | 0.000  
   | 0.0000   | 0.0000   | 0.000  | 0,000  | 0.000   
  | 0.4530   | 0.0000   | 0.000  | 162 5000  | •   
  |  |  |
| 0 0 5                         | 9C91                                     | r eo  |  | 16   | 09   | ERR  | 4   
  | 0  | <b>-</b>  | 0  | 0  | 0  | 40   
   | 136  | 20       | 3580  | 4                                  | 0 ;  | 2                    | 0   | 0  
   | 8200   | 0 0  | -  | 0  | 0   
  | 8.2  | 0  | <b>-</b>   | 20  | | | |
  | (0.0065 kg/day)  |  |
| ALUHINUM<br>ARSENIC<br>BARIUM | BENZENE                                  | BIS(2-ETHYLHEXYL)PHTHALATE  | BUTYLBENZYLPHTHALATE   | CADMIUM  | CHROMICA   |  |   
  |  |   | DICHLOROFLUOROMETHANE  |  |  | ETHYLBENZENE   
   | IRON   | LEAD     | MANGANESE   | METHYLENE CHLORIDE<br>NADHTHAI GME | NICKEL   | 4- NITROPHENOL       | PENTACHLOROPHENOL   | PET HYDRO (ASSUME JP-4)  
   |  | SILVER   | , 2, 2- TETRACHLOROETHANE  | TETRACHLOROETHENE  | TOLUENE   
  | TOTCH OBOST HODOWETHAND  | VINYL CHIORIDE   | XYLENES  | ZINC  | Col 7 = (col 2) x (2 L/dav)   
  | 8 = (col 2) x (col 6) x  | 1 2 2 4 1 1 1 1  |
|                               | 00000 00000 00000 0 00000 0 00000 0 0000 | 0 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 | 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000 | 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000 | 0 0.00000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0. | C 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0. | ARSENIC   0 0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000  
0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.00000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00 | ARSENIC 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0. | ARSENIC 0 0.0000 | ARSENIC 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000 | ARSENIC ARSENIC O 0.00000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0 | ARSENIC 0 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0 | ARSENTIC O 0.0000
0.0000 0.000 | National Color   Nati | Name     | ARSENIC<br>BARTUM<br>BENZENE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)PHTHALATE<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL)<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEXYL<br>BISCZ-ETHYLHEX | Name                               | March   Marc | National Corrections | SANTON CONTINUES   0 0,0000 | STATE   STATE   STATE   STATE   STATE   STATE   STATE   STATE   STATE  
STATE   STAT | ARSENTIAN         0         0.0000         0.0000         0.0000         0.0000         0.0000           BARTUM         BARTUM         0         0.0000         0.0000         0.0000         0.0000           BEARTUM         BEARTUM         4         4.1500         0.0000         0.0000         0.0000           BENZEME         4         1500         4.150         15.0000         0.0000         0.0000           BISCZ-TRYLHEXYL PHTHALATE         2         4.2500         15.0500         0.01472         0.0004           BUTYLBENZYL PHTHALATE         2         2.5000         18.2500         0.0167         0.0006           COPPER         2         2.5000         18.2500         0.0157         0.0006           COPPER         4         2.0000         9.0000         0.0006         0.0006         0.0006           COPPER         FRR         ERR         ERR         RR         0.0000         0.0000         0.0000           COPPER         FRR         ERR         B.9700         12.9700         0.0000         0.0000         0.0000           DICHLOROERIZEME         0         0.0000         0.0000         0.0000         0.0000         0.0000           DI | SERVICE   Control   Cont | STATE   STAT | SERVICE   CONTRICT | BEATUM   STATE   0 0.0000
0.0000 0. | BANDER   B | BASE   LINE   BASE   C. 10000 | Balty   Balt | Bailtie   Common | Marchine   0 0,0000
0,0000 0 | March   Marc | March   Marc |

TABLE P-9
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

ARCHIVIAN   ARCHIVIAN   11200 3   3   5000   280   2	ALU ARS BAR BEN BUT CAD	NAME TCLF SURFACE WATER HAZARD	(ng/L)	BENCHMARK (ug/day)	BENCHMARK (ug/L)	EFFECTS BENCHMARK (ug/L)	FACTOR (L/KG)
BAKENITE   312 0.04 350 100	ARS BAR BEN BUT CAD	MINUM	11200	3		2000	1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
STATE   STAT	BEN	ENIC	12	0.04	360	100	280
10000   1700	BUT	ZENE	COC	0.0	14500		7
CONTRICTION	CAD		*	10000	1200		3
CHEROMETER 17 0.016 16 100 100 100 100 100 100 100 100 1			•	20	99	•	0
DICHICROBENZENE   35 2000   9.2 200	CHR	OMIUM	17	0.016	3.5	5	ה כל ה
DICHLOROBENZENE		PER	35	2000	0	002	21.0
14   285   18600   19600   1		HLOROBENZENE		760	1120	007	109
11   11   11   11   11   11   11   1		HLOROBENZENE		094	2850		)72
DICHLORGETHERE  1.4 2.6 135000 DICHLORGETHERE  1.16 11000 DICHLORGETHERE  1.16 11000 DICHLORGETHERE 10000 52100 0.6 2120 0.6 11000 DICHLORGETHERE 10000 52100 0.2 10000 32000 0.2 10000 32000 0.2 10000 0.2 10000 0.2 10000 0.2 10000 0.2 10000 0.2 10000 0.2 10000 0.3 10000 0.3 10000 0.4 15000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 10000 0.7 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2		HLOROETHANE		15	118000		71
DIETHYLPHENIALE   11000   52100   52		HLOROETHENE	1.4	2.6	135000		7.7
DIETHYLPHTHALATE	210	HLOROFLUOROMETHANE		116	11000		
100		THYLPHTHALATE		10000	52100		120
DI -H-BUTYPHTHALATE   2200   32000   5000   1800   1800   340   18000   340   18000   340   18000   34000		ETHYLPHENOL		9.6	2120		150
FINTLE BRIZENE   8860   150   32000   15	1-10	N-BUTYLPHTHALATE	2	10000	076		ž č
FON   FON	ETH	YLBENZENE		2200	32000		500
HANGANESE	IRO	2	8860	150	700	2000	
MANGAMESE	LEAL	Q	33	100	34	2000	30.5
HETHYLENE CHLORIDE  HATHALENE  NAMITHALENE  NAMITHALENE  NAMITHALENE  NATIONAL CHORIDE  NICKEL  NICKEL  NICKEL  NITROPHENOL  PENTACHLOROPHENOL  PET HYDRO (ASSUME MOTOR DIL)  SILVER  SILVER  TETRACHLOROFTHANE  TETRACHLOROFTHANE  TRICHLOROFTHANE  NIVIN'L CHORIDE  XYLENES  Col 7 = (col 2) x (col 6) x (0.0065 kg/day)  Col 10 = (col 10) y (col 4)  Col 11 = (col 2) x (col 4)  Col 11 = (col 2) x (col 4)  Col 11 = (col 2) x (col 4)  Col 11 = (col 2) x (col 4)	MANG	GANESE	1490	0.25	350	200	007
NAPHTALENE   21	ÆT	HYLENE CHLORIDE		4	193000		7-7
NICKEL	NAP	HTHALENE		280	2300		430
NITROPHENOL  NITROPHENOL  NITROPHENOL  280  55  57300  FET HYDRO (ASSUME JD-4)  PET HYDRO (ASSUME MOTOR OIL)  PET HYDRO (ASSUME MOTOR OIL)  PET HYDRO (ASSUME MOTOR OIL)  SILVER  SILVER  SILVER  SILVER  TETRACHLOROETHANE  TOLUENE  TRICHLOROETHAN		KEL	21	260	1100	200	100
PENTACHLOROPHENOL PENTACHLOROPHENOL 13 28800 13 28800 PET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME MOTOR OIL) S1LVER S1LVER TETRACHLOROETHENE TETRACHLOROETHENE TETRACHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROFLUROMETHA		ROPHENOL.		0.7	8280		•
PET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME MOTOR OIL) PET HYDRO (ASSUME MOTOR OIL) PET HYDRO (ASSUME MOTOR OIL) PET HYDRO SILVER  TETRACHLORGETHANE TETRACHLORGETHENE TRICHLORGETHENE T	PEN			280	55	37300	780
PET HYDRO (ASSUME MOTOR DIL) 2500 61.9 PHENOL SILVER SILVER 10 9320 1 2 5280 1 1 6 5280 1 1 7500 1 1 1 1000 1 1 1 1000 1 1 2 1 1000 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PET			13	28800		120
PHENOL SILVER 20 1.2 1.2 1.2 1.2 1.2 1.2 20 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	PET	DRO (ASSUME	2500	61.9			
SILVER  SILVER  SILVER  10 9320  1 2 5280  1 17500  1 17500  1 1 1000  1 1 1000  1 1 1000  1 1 1000  1 1 1000  1 1 1000  1 1 1000  1 1 1000  1 1 1000  1 1 1000  1 1 1 1000  1 1 1 1000  1 1 1 1000  1 1 1 1	PHE	40r		0089	.10000		1.7
TETRACHLOROETHANE		/ER		50	1.2		
RACHLOROETHENE		RACHLOROETHANE		10	9320		7
UENE CHLOROETHENE CHLOROFTHENE CHLOROFLUORCMETHANE TYL CHLORIDE TYL CH	TETR	RACHLOROETHENE		7	5280		77
CHLOROETHENE CHLOROFTHENE CHLOROFLUOROMETHANE TYL CHLORIDE TYL CHLORIDE TYL CHLORIDE TYL CHLORIDE TYL CHLORIDE TO 1000 THO 1000 T	TOLU	JENE		54	17500		84
CHLOROFLUOROMETHANE  TYL CHLORIDE  1000  181000  16  13500  16  13500  17  17  180  180  180  180  180  180	TRIC	CHLOROETHENE		75	45000		17
IYL CHLORIDE  ENES  120  160  13500  17  17 = (col 2) x (2 L/day)  18 = (col 2) x (col 6) x (0.0065 kg/day)  19 = (col 7) + (col 8)  10 = (col 9) / (col 3)  11 = (col 2) / (col 4)	TRIC	CHLOROFLUOROMETHANE		11	11000		72
FENES   16   13500   16   13500   16   13500   16   16   16   16   16   16   16	VINY	'L CHLORIDE		1000	381000		7 7
120   10000   180   2000   1   7 = (col 2) x (2 L/day)   8 = (col 2) x (col 6) x (0.0065 kg/day)   9 = (col 7) + (col 8)   10 = (col 9) / (col 3)   11 = (col 2) / (col 4)	XYLE	INES		16	13500		1002
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x (0.0065 kg/day) 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)	ZINC		120	10001	001	0000	000
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)			חלו	00001	180	7000	1000
8 = (col 2) x (col 6) x 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)	Col	(col 2) x (2 L/day)				, , , , , , , , , , , , , , , , , , ,	1 1 1 1 1 1 2 2 3 4 3 4 3 4 5 6 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)	Col	(col 2) x (col 6) x	0.0065 kg/day)				
10 = (col 9) / (col 11 = (col 2) / (col	Col	= (col 7) + (col 8)					
11 = (col 2) / (col	Col	= (col 9) / (col					
	Col	2) / (col					

TABLE P-9 (continued)
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

ARENIES   ARENIES   CANADIA   CANA	F SURFACE	CONTAMINANT NAME TCLF SURFACE WATER HAZARD	7 DRINKING WATER INTAKE (ug/day)	8 FOOD INTAKE (ug/day)	9 TOTAL INTAKE (ug/day)	10 HEALTH HAZARD QUOTTENT	11 AQUATIC HAZARD QUOTIENT	12 TERRESTRIAL HAZARD QUOTIENT	
March   Marc	₹ ₹	LUMINUM	22400	0.0000	22400.0000	7466.6667	0.0000	2.2400	
BERZERE  COMPANIANTE EL S. 10.000 0.0	ć m	ARIUM	770	10.0100	780.0100	1146.0000	0.0333	0.1200	
BATTABERTZPHTHALATE	8	ENZENE	0	0.0000	00000	0.000	0000	0.000	
CHICAGORETEME	<b>B</b>	UTYLBENZYLPHTHALATE	9	12.8700	18.8700	0.0019	0.0018	0.000	
COPPER         SEX.1000         \$56,500         \$1,625           COPPER         TOTAL (NORMELHAR)         \$4         \$27,100         \$56,500         \$1,625           COPPER         TOTAL (NORMER/REHE         0         0,0000 <t< th=""><th>3</th><th>ADHIUM</th><th>16</th><th>2.6000</th><th>18.6000</th><th>0.9300</th><th>12,1212</th><th>0.8000</th><th></th></t<>	3	ADHIUM	16	2.6000	18.6000	0.9300	12,1212	0.8000	
CHORDORENZENE   70 4.77750   117,7750   0.0559   3.8443	ਹ ∤	HROHIUM	34	22.1000	56.1000	3506.2500	1.0625	0.1700	
DICHICROBERIZENE	ວ .	OPPER	2	47.7750	117.7750	0.0589	3.8043	0.1750	
DICTURGETHANE		CHLOROBENZENE	0	0.0000	00000	0.000	0.000	0.000	
DICTIONGETIMENER   2.8   0.0000   0.0		I CHLOROBENZENE	00	0.0000	00000	0.0000	00000	0.000	
DECHLORGICURGMETHANE		I CHLOROE I MARE	) (	0.0000	0.0000	0.0000	0000	0.000	
DIETRYLPHIALATE		ICHLOROFLUOROMETHANE		0000	0.000	1.1021	0.000	0.0000	
District Pierre   District   Di	ā	IETHYLPHTHALATE	0	0000.0	0000 0	0000	0,000	0000	
Decirio   Deci		IMETHYLPHENOL	0	0.0000	0,000	0.000	00000	0.000	
RANGAMESE   Control   Co	اَمَ	I-N-BUTYLPHTHALATE	4	1.1570	5.1570	0.0005	0.0021	000000	
The color of the	ш :	THYLBENZENE	0	0.000	0.000	0.000	0.000	000000	
The properties   1,000   1,0	= :	NO	17720	5759.0000	23479.0000	156.5267	22,1500	1.7720	
MANUAL CHORIDE   C700   S074,1000   C7410,0000   C7410   C7410,0000   C7410   C7410,0000   C741		AND AND SE	8 6	64.3500	130.3500	1.3035	0.9706	0.0066	
NEW   NATIONAL CHICAGO   0.0000   0.0	Ė	ANGANESE THYLEND ON OBJUD	0867	3874.0000	6854.0000	27416.0000	4.2571	7.4500	
NICKEL NITRECHENGL	ž	APHTHALENE		0000	0,000	0,000	0.0000	0.0000	
NITROPHENOL PENTACHICROPHENOL PENTACHICROPHENOL PENTACHICROPHENOL PET HYDRO (ASSUME JP-4) PET HYDRO (A	2	ICKEL	42	13.6500	55.6500	0.2140	0.000	0.0000	
PENTACHLOROPHENOL         0.0000         0.0000         0.0000         0.0000         0.0000           PET HYDRO (ASSUHE HOLD         0.0000         0.0000         0.0000         0.0000         0.0000           PET HYDRO (ASSUHE HOLD         0.0000         0.0000         0.0000         0.0000         0.0000           PET HYDRO (ASSUHE HOLD         0.0000         0.0000         0.0000         0.0000         0.0000           SILVER         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000           SILVER         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000           TETRACHLORGTHENE         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000           TRICHLORGTHENE         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000           TRICHLORGTHENE         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000           TRICHLORGTHENE         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000           VINTENES         240         780.0000         0.0000         0.0000         0.0000         0.0000	_	ITROPHENOL	0	0.0000	0.000	0.000	00000	0.000	
PET HYDRO (ASSUME JD-4) PET HYDRO (ASSUME MOTOR OIL) PET HYDRO (ASSUME JD-4) PET HYDRO (ASSUME JD-4) PET HYDRO (ASSUME MOTOR OIL) S1UVER S1LVER S1LVER S1LVER S1LVER S1LVER S1LVER S1LVER S1LVER S1LVER S1LVER S1LVER O 0.0000 0.0000 0.0000 0.0000 TETRACHLOROFTHANE O 0.0000 0.0000 0.0000 0.0000 TETRACHLOROFTHENE O 0.0000 0.0000 0.0000 0.0000 TETRACHLOROFTHENE O 0.0000 0.0000 0.0000 0.0000 TRICHLOROFTHENE O 0.0000 0.0000 0.0000 0.0000 TRICHLOROFTHENE O 0.0000 0.0000 0.0000 0.0000 TRICHLOROFTHENE O 0.0000 0.0000 0.0000 TRICHLOROFTHENE TRICHLOROFTHENE COL 7 = (col 2) x (2 L/day) TSOURC COL 7 = (col 2) x (col 6) x (0.0065 kg/day) TSOURS = 44675.9984 45.1153 TSOURC COL 10 = (col 2) / (col 3) COL 11 = (col 2) / (col 3) COL 12 = (col 2) / (col 4)	<b>4</b>		0	0.0000	0.000	0.000	0,000	0.0000	
PET HYDRO (ASSUME MOTOR OIL) 5000 0.0000 80.7754 0.0000 0.	₹ 1	T HYDRO (ASSUME JP-4)	0	0.000	0.000	0.000	0.000	0.0000	
TETRACHLOROETHANE  0 0.0000  0	d 7	ET HYDRO (ASSUME MOTOR OIL)	2000	0.0000	2000,0000	80.7754	0.000	0.0000	
TETRACHICROETHANE  0 0.0000 0.	2 2	I VED	0	0.0000	0.0000	0.0000	0.0000	0.000	
TETRACELONG THENE  TO 0,0000 0		LVER TRACHI ORDETHANG	<b>-</b>	0.0000	0.000	0.0000	0.0000	00000	
UENE CHLOROFTHENE CHLOROFTHENE CHLOROFTHENE CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHLOROFTUGNOM CHROROFTUGNOM CHLOROFTUGNOM CHROROFTUGNOM		TRACHLOROFTHENE	<b>&gt;</b> C	0.000	0,000	0,000	0.000	0.000	
CHLOROETHENE CHLOROFTHENE CHLOROFTUGNOM CHLOROPELUOROMETHANE CHLORIDE CHLOROFLUCROMETHANE 0 0.00000	1	CLUENE	0	0.000	0000	0000	0,000	0,000	
CHLOROFLUOROMETHANE 0 0.0000 0	4	RICHLOROETHENE	0	0.0000	0.000	0.000	0.000	0000	
Factor   Color   1.8	RICHLOROFLUOROMETHANE	0	0.0000	0.000	0.000	00000	0000		
EMES  0 0.0000 0.0000 0.0000  C 780.0000 1020.0000 0.1020 0.0667  7 = (col 2) x (2 L/day)  8 = (col 2) x (col 6) x (0.0065 kg/day)  9 = (col 7) + (col 8)  10 = (col 9) / (col 3)  11 = (col 2) / (col 4)  12 = (col 2) / (col 5)	7	INYL CHLORIDE	0	0.0000	0.0000	0.000	0.000	0.000	
C   240   780.0000   1020.0000   0.1020   0.667     7 = (col 2) x (2 L/day)   SUMS = 44975.9984   45.1153   1     8 = (col 2) x (col 6) x (0.0065 kg/day)   LOG OF SUMS = 4.6530   1.6543   1   1   (col 3) / (col 3)   1   1   (col 2) / (col 4)   1   1   (col 2) / (col 5)   1   1   1   1   1   1   1   1   1	×	ILENES	0	00000	0.000	0.000	0,000	0.000	
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x (0.0065 kg/day) 1.6543 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4) 12 = (col 2) / (col 5)	17	NC	240	780,0000	1020,0000	0.1020	0.6667	0.0600	
9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4) 12 = (col 2) / (col 5)	: ដដ	$7 = (col \ 2) \times (2 \ L/day)$ $8 = (col \ 2) \times (col \ 6) \times$	(0.0065 kg/dav)	ns O I	= SIINS	44975.9984	45.1153	12.8986	
12 = (col 2) / (col	333	9 = (col 7) + (col 10 = (col 9) / (col 11 = (col 2) / (col	•						
	3	12 = (col 2) / (col							

# Northwest Landfill (NWLF) Defense Priority Model List of Comments Used to Justify Scoring

Item <u>Number</u>	<u>Comment</u>
1.	Contaminants have been detected in the surface water. Detected were butylbenzylphthalate di-n-butylphthalate, naphthane, petroleum hydrocarbons and elevated levels of metals. Score as 100.
11.	Landfill area has no run-on provisions and runoff is not controlled by any engineering measures. Ponding of excess surface water on site can occur. Waste at the site is not covered by an engineered cap. Score as 0.8.
13.	Contaminants were detected in the groundwater. Contaminants detected were bis(2-ethylhexyl)-phthalate, butylbenzylphthalate, and heavy metals. Score as 100.
21.	There are not any engineered barriers at the site. No cleanup measures have been initiated at the site. There is no evidence of a liner beneath the landfill. Score as 1.0.
23-42	Scoring of these questions is based on calculated sums and logs shown on hazard tables detailing the contaminants detected at the NWLF.
43.	No drinking water is obtained for the population from an area possibly effected by the NWLF. Lake St. Clair would be the nearest surface water body affected, but the contaminant entry point is greater than three miles from the drinking water intake for the city water plant. Score as 0.
44.	The nearest surface water body to the site is Lake St. Clair. Another surface water body, the Clinton River, is located to the south. Lake St. Clair is most likely to be affected by contaminants from the site because of the discharge of stormwater into the lake. Factors to consider are recreational uses of surface water bodies, such as fishing. It is greater than 3 miles to the public drinking water intake. Score as 2.

- 45. Population within 1,000 ft. of site is greater than 100 people. This includes base personnel as a daytime population of people in base buildings and hangers southwest and west of site. Use of a mess hall near the site contributes to this population estimate. Base personnel in the military reside in homes to the west of the site. Score as 3.
- The distance to the nearest installation boundary is approximately 200-300 feet. Score as 3.
- 47. Land use within one mile of the site is dominantly residential. Score as 3.
- Surface water from the site would be discharged, untreated, to Lake St. Clair. Biota and habitats affected would include fish and spawning. Score as 2.
- No known critical environments occur within one mile of the site. Score as 0.
- There are no known water wells using groundwater at the site. Water is supplied by the city. No groundwater downgradient of the site is being produced by any wells. Thus, any contaminated water from the site would not reach humans. Score as 0.
- 55. Groundwater flows from the site in a general southerly direction based on the potentiometric of the groundwater elevation Groundwater is intercepted by the stormwater drainage system along the south and southeast sides of the site. The estimated travel time to reach storm sewers is approximately 75 years. Water would be discharged to Lake St. Clair, but no surface water intakes for drinking water occur within three miles of this discharge point. as 0.
- No groundwater beneath the site is being used. General lack of a defineable aquifer beneath the site, thus would not be a practical source of water. Water is supplied by the city, so there is not a need to use any groundwater at the site. Score as 0.
- No known population would be effected by contaminated groundwater from the site because no production of groundwater occurs at the site or within

three miles of the site. Any surface water contaminated would also not affect the population because it is more than three miles to the nearest intake for drinking water. Score as 0.

- Population within 1,000 feet of site is greater than 100 people. See question #45. Score as 3.
- Distance to the nearest base boundary is approximately 200-300 feet. Score as 3.
- 62. Groundwater would reach the storm drainage system in approximately 75 years and is then discharged to Lake St. Clair. Based on this, the score would be 1.
- The lake would be most likely to receive contaminated groundwater from the site. This would either occur via the storm drainage system or discharge of groundwater to the lake. This could affect fishing and spawning in Lake St. Clair. Score as 2.
- No known critical environments occur within one mile of the site. Score as 0.

Site identification: Northwest Landfill (Site 06) - NWLF

	SUF	LFACE WATER PATHWAYS								_
	Œh-	erved releases		Çİ		1.	Multiplier	Product (score x	Max. score	
				0	ne	)		mult.)		
	1.	Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0		(	100	1	100	100	
	Pat	hway characteristics								
	2.	Distance to nearest surface water	0	1	2	3	4		12	
	3.	Net precipitation	0	1	2	3	1		3	
	4.	Surface erosion potential	0	1	2	3	4		12	
	5.	Rainfall intensity	0	1	2	3	4		12	
-	6.	Surface permeability	0	1	2	3	3		9 ,	,
	7.	Sum of items 2 through 6							48	
- 1	Β.	Normalized score (multiply item 7 x 100/48)								
ę	9.	Flooding potential	0	1	2	3	8	<del></del>	24	
1	10.	Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.						100		
1	1 1							100		
		Waste containment effectiveness factor (Table 2)						0.8		
1	2.	Final score for surface water pathways (multiply ite	m	10	x	item	11)	80		

#### COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the NWLF.

Prepared by On D. Clander 9 Dec 88 Checked by RHG 12/9/88

Chserved releases  Chserved releases  13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.  Pathway characteristics  14. Depth to seasonal high groundwater from base of waste or contaminated zone  15. Fermeability of the unsaturated zone  16. Infiltration potential  17. Sum of items 14 through 16  18. Normalized score (multiply item 17 x 100/57)  19. Fotential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table  20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.  21. Waste containment effectiveness factor (Table 5)  22. Final score for groundwater pathways (multiply item 20 x item 21)  10. 100  100  1 100	UNDWA	TER PATHWAYS				
If yes, assign score of 100 and proceed to item 20.  If no, assign score of 0 and proceed to item 14.  Pathway characteristics  14. Depth to seasonal high groundwater from base of waste or contaminated zone 0 1 2 3 9 27  15. Permeability of the unsaturated zone 0 1 2 3 5 15  16. Infiltration potential 0 1 2 3 5 15  17. Sum of items 14 through 16 57  18. Normalized score (multiply item 17 x 100/57)  19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table 0 1 2 3 5 15  20. Adjusted pathways score. If item 13 is 100, enter 100.  If item 13 is 0, enter sum of items 18 and 19.  If sum exceeds 100, enter 100.  21. Waste containment effectiveness factor (Table 5) 1.0	<u>Obs</u>	erved releases	(circle	Multiplier	(score x	Max. score
14. Depth to seasonal high groundwater from base of waste or contaminated zone  15. Permeability of the unsaturated zone  16. Infiltration potential  17. Sum of items 14 through 16  18. Normalized score (multiply item 17 x 100/57)  19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table  20. Adjusted pathways score. If item 13 is 100, enter 100.  If item 13 is 0, enter sum of items 18 and 19.  If sum exceeds 100, enter 100.  21. Waste containment effectiveness factor (Table 5)  27. Depth to seasonal high groundwater from base of 0 1 2 3 9	13.	If yes, assign score of 100 and proceed to item 20	0 100	1	100	100
waste or contaminated zone  0 1 2 3 9	Pati	nway characteristics				
16. Infiltration potential 0 1 2 3 5 15  17. Sum of items 14 through 16 57  18. Normalized score (multiply item 17 x 100/57)  19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table 0 1 2 3 5 15  20. Adjusted pathways score. If item 13 is 100, enter 100.  If item 13 is 0, enter sum of items 18 and 19.  If sum exceeds 100, enter 100 100  21. Waste containment effectiveness factor (Table 5) 1.0	14.	Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9		27
17. Sum of items 14 through 16 57  18. Normalized score (multiply item 17 x 100/57)  19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table 0 1 2 3 5 15  20. Adjusted pathways score. If item 13 is 100, enter 100.  If item 13 is 0, enter sum of items 18 and 19.  If sum exceeds 100, enter 100. 100  21. Waste containment effectiveness factor (Table 5) 1.0	15.	Permeability of the unsaturated zone	0 1 2 3	5		15
18. Normalized score (multiply item 17 x 100/57)  19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table  20. Adjusted pathways score. If item 13 is 100, enter 100.  If item 13 is 0, enter sum of items 18 and 19.  If sum exceeds 100, enter 100.  21. Waste containment effectiveness factor (Table 5)  1.0	16.	Infiltration potential	0 1 2 3	5		15
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table  20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.  21. Waste containment effectiveness factor (Table 5)  100	17.	Sum of items 14 through 16	•			<b>5</b> 7
zone to "short-circuit" the pathway to the water table  0 1 2 3 5	18.	Normalized score (multiply item 17 x 100/57)				
11 1tem 13 is 0, enter sum of items 18 and 19.  11 sum exceeds 100, enter 100.  21. Waste containment effectiveness factor (Table 5)  1.0	19.	zone to "short-circuit" the pathway to the water	0 1 2 3	5		15
21. Waste containment effectiveness factor (Table 5) 1.0	20.	II Item 13 15 0, enter sum of items 18 and 10	100.		100	
	21.					
			20 x item 21	<b>&gt;</b>		

COMMENTS ON GROUNDWATER PATHWAYS

Site	identification:	NWLF
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CONTAMINANT	HAZARD		SURFACE	WATER
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If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

		Score (circle	Result	Logarith (base 10
23.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	m•) 36202	1.5940	5.5587
24.	Human health hazard score	0 1 2 4(6)		
25.	Normalized human health hazard score (multiply item 24 x 100/6)		100	
26.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		<u>.8730</u>	2.7951
27.	Ecological hazard score	0 1 2 3		
28.	Normalized ecological hazard score (multiply item 27 x 100/6)	4(5)6	83.333	
	, 			
29.	Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contami	inant:
30.	Normalized human health hazard score (multiply item 29 x 100/9)			
	Maximum ecological hazard index	0 1 2 4 5	Contami	inant:
2.	Normalized ecological hazard score (multiply item 31 x 100/6)			
	INANT HAZARD GROUNDWATER			
con /e n	ATMANT HAZARD GROUNDWATER  Staminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 sinants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	2. Attach Haz	ard Worksh	eet or list
con re n ntam	staminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 minants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	2. Attach Haz	ems 33 thro ard Worksh	ugh 38. If eet or list 4.4956
con tam 3.	staminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 sinants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	3130	ard Worksh	eet or list
con te n itam i3.	itaminants have been detected in groundwater (score of 100 in item 13) of been detected (score of 0 in item 13), complete items 39 through 4 inants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score	31300 0 1 2 46	ard Worksh	eet or list
con tam	itaminants have been detected in groundwater (score of 100 in item 13) to been detected (score of 0 in item 13), complete items 39 through 4 dinants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of	31300 0 1 2 46 15.8	6.5532	4.4956
tam	itaminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 inants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)	31300 0 1 2 46 0 1 2 3 0 1 2 3	6.5532	4.4956
con tam 3.	itaminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 inants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)  Ecological hazard score	3130 0 1 2 46 15.8 0 1 2 3 0 5 6	6.5532 100 3228	4.4956
connection 11 connection 12 connection 13 co	staminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 sinants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)  Ecological hazard score  Normalized ecological hazard score (multiply item 37 x 100/5)  Maximum human health hazard index	3130 0 1 2 46 15.8	6.5532 100 3228	4.4956 1.1993
connitam 333. 34. 35. 6.	staminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 dinants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)  Ecological hazard score  Normalized ecological hazard score (multiply item 37 x 100/6)  Maximum human health hazard index  Normalized human health hazard score (multiply item 39 x 100/9)	3130 0 1 2 46 15.8 0 1 2 3 6	100 3228	4.4956 1.1993
con name and a second s	staminants have been detected in groundwater (score of 100 in item 13) obt been detected (score of 0 in item 13), complete items 39 through 4 sinants, as appropriate.  Sum of human health hazard quotients (from column 10 of Hazard Worksheet)  Human health hazard score  Normalized human health hazard score (multiply item 34 x 100/6)  Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)  Ecological hazard score  Normalized ecological hazard score (multiply item 37 x 100/5)  Maximum human health hazard index	3130 0 1 2 46 15.8 0 1 2 3 6	100 3228 Contamir	4.4956 1.1993

Site identification: NWLF

HUM	UN HEALTH RECEPTORS SURFACE WATER PATHWAY				
		Score (circle one)	Multiplier	Product (score x mult.)	Max. score
43.	Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	<b>0</b> 1 2 3	3	0	9
44.	Water use of nearest surface water body(ies)	0 123	3	6	9
5.	Population within 1000 ft (305 m) of the site	0 1 2(3)	1	3	3
6.	Distance to the nearest installation boundary	0 1 2(3)	1	3	3
7.	Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2(3)	1	3	3
8.	Sum of items 43 through 47			15	27
9.	Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)		5 <u>5.556</u>		
ωL	OGICAL RECEPTORS SURFACE WATER PATEWAYS				
0.	Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 123	5	<u>10</u> :	1.5
1.	Presence of "critical environments" within 1 mile (1.6 km) of the site	3	1	0	3
2.	Sum of items 50 and 51		•	_10_ 1	.8
3.	Final score for ecological receptors on surface water pathways (multiply item $52 \times 100/18$ )			55.556	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: NWLF

	LIH RECEPTORS GROUNDWATER PATHWAY	Score (circle one)	Multiplier	Product (score x mult.)	Max.
54.	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	<b>1</b> 2 3	9	0	27
<b>55</b> .	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	<b>0</b> 1 2 3	5	0	15
56.	Groundwater use of the uppermost aquifer	<b>0</b> 1 2 3	4	0	12
57.	Population potentially at risk from groundwater contamination	06 9 12 18 24 27 36	1	0	36
58.	Population within 1000 ft (305 m) of the site	0 1 2 3	.1	3	3
59.	Distance to the nearest installation boundary	0 1 2 3	1	3	3
60.	Sum of items 54 through 59			. 6	96
61.	Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)	······································		6.25	
CTCA	L RECEPTORS GROUNDWATER PATHWAYS				
ميس		0000	3	•	
	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0(1)2 3	J	3_	9
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area  Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 1 2 3	3	6	9
62. 63.	any downgradient habitat or natural area  Importance/sensitivity of downgradient biota/habitats that are	_			
62. 63.	any downgradient habitat or natural area  Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points  Presence of "critical environments" within 1 mile (1.6 km) of the	0 123	3		9

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

#### SCORING SUMMARY SHEET

		Pa	thways score		Contaminant hazard score	R	eceptors sco	ore		Overall score
67.	Surface water/human health scores	(	80 item 12	x	100 item 25/30	×	5 <u>5.556</u> item 49	)	/10,000 =	44.445
68.	Surface water/ecological scores	(	80 ;	x	83.333 item 28/32	x	55.556 item 53	)	/10,000 =	37.037
69.	Groundwater/human health scores	(	100 item 22	x	100 item 35/40	x	6.25 item 61	)	/10,000 =	6.25
70.	Groundwater/ecological scores	(	100 ;	x	66.667 item 38/42	x	42.857	)	/10,000 =	28.571

#### OVERALL SITE SCORE:

71. 
$$\left(\frac{44.445}{\text{item } 67}\right)^2 \times 5 + \left(\frac{37.037}{\text{item } 68}\right)^2 + \left(\frac{6.25}{\text{item } 69}\right)^2 \times 5 + \left(\frac{28.571}{\text{item } 70}\right)^2 = \frac{12260.143}{1}$$

72. Overall site score 
$$\sqrt{\frac{12260.143}{12260.143}}$$
 3.464 =  $31.965 = 32$ 

TABLE P-10
NULF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

3	280	7 2	310	099	200	210	069	0	14	Ŋ.	و ه	0	0	2	9 9	⊇ ~	<b>†</b> 9	2		780	170	1.7	2	6.2	<b>4</b> F	2 5	72	7.2	320	0	:
6 BIOACCUMULATION FACTOR (L/KG)	32	•	Ř	3		٠ <b>٠</b>	1 20	7	,		2	=	52	7	χ. ·	₹ ~	<b>1</b> 4	=		~ ;	=	-		~			•	7	3	1000	
5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	5000		•	•	0,00	200	2							2000	2000	007	•	200		37300										2000	
4 AQUATIC EFFECTS BENCHMARK (ug/L)	360	14500	160	1700	0.66	0 0	1120	2850	118000	135000	52100	2120	32000	007	3,5	000501	2300	1100	8280	55	00887	10000	1.2	9320	5280	00057	11000	381000	13500	180	
3 HEALTH EFFECTS BENCHMARK (Ug/day)	3 0.04	30	10000	10000	20 50	2002	760	760	15	2.0	10000	9.6	2200	150	100	0.0	280	260	0.7	280	51 0	9089	20	10	7 7	<b>67</b>	1.	1000	16	10000	
2 CONCENTRATION (ug/L)	330	333	•	-		3.3	3							3250	0029	DACI		35													(0.0065 kg/day)
1 CONTAMINANT NAME NULF GROUNDWATER CONTAMINANT HAZARD	: 30	BARIUM Benzene	THYLKE	BUTYLBENZYLPHTHALATE	CADMIUM	COPPER	DICHLOROBENZENE	DICHLOROBENZENE	DICHLOROETHANE	DICKLOROETHENE	DICTLOROFLOOROME I HANG		ETHYLBENZENE	IRON	LEAD	MANGANESE HETUVIENG FULDBING	MEINTLEME CHLOKIDE NAPHTHAIFNF	NICKEL			PET HYDRO (ASSUME JP-4) DET HYDRO (ASSUME MOTOR OTL)		SILVER	TETRACHLOROET	TETRACHLOROETHENE	TOLUENE	TRICHIORDELINGROMETHANE	VINYL CHLORIDE	XYLENES	ZINC	Col 7 = (col 2) x (2 L/day) Col 8 = (col 2) x (col 6) x Col 9 = (col 7) + (col 8) Col 10 = (col 9) / (col 3) Col 11 = (col 2) / (col 4) Col 12 = (col 2) / (col 5)
NULF GROUN	8 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8						1,4-	1,3-	1,1-	IRANS-1,2-		-5'6-							-7					1,1,2,2-							·

TABLE P-10 (continued)
NWLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

NULF GROUP	1 CONTAMINANT NAME NWLF GROUNDWATER CONTAMINANT HAZARD	7 DRINKING WATER INTAKE (Ug/dsy)	8 FOOD INTAKE (ug/day)	9 TOTAL INTAKE (ug/day)	10 HEALTH HAZARD QUOTIENT	11 AQUATIC HAZARD QUOTIENT	12 TERRESTRIAL HAZARD QUOTIENT
	ALUMINUM	099	0.0000	0000.099	220.0000	0.0000	0.0660
	BARIUM	999	8.6580	674.6580	4497,7200	0.0218	0.000
	BENZENE	0	0000	0.0000	0.000	0.000	0.000
	BIS(2-ETHYLHEXYL)PHTHALATE	18	18,1350	36.1350	0.0036	0.0563	0.000
	BUTYLBENZYLPHTHALATE	2	4.2900	6.2900	9000.0	9000.0	0.000
	CADMIUM	0.	0.0000	0.000	0.000	0.000	0.000
	CHROMIUM	0 ;	0.000	0.000	0.000	0.000	0.000
	COPPER	99	45.0450	111.0450	0.0555	3.5870	0.1650
7,4-	- DICHLOROBENZENE - DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.000	0.000
-	- DICHIOROFIHANE	0 0	0000	0000	0000	0000	0000
TRANS-1,2-	- DICHLOROETHENE	0	0,000	00000	0,000	0.000	0.000
	DICHLOROFLUOROMETHANE	0	00000	0.0000	0.000	00000	0.0000
		0	0.000	0.0000	0.000	0.000	0.000
2,4-	_	0	0.000	0.0000	0.000	0.000	0.000
	ETHYLBENZENE	0	0.0000	0.000	0.0000	0.0000	0000.0
	IRON	0059	2112,5000	8612.5000	57.4167	8.1250	0.6500
	HANCANGE	0 026	244, 0000	0000.0	0.000	0.0000	0,000
	METHYLENE CHLORIDE	00/3	0000-0	0000 0	0000 0	0.000	0.000
	NAPHTHALENE	0	000000	0.000	0,000	0.000	0.000
	NICKEL	02	22.7500	92.7500	0.3567	0.0318	0.1750
- 7	_	0	0.000	0.000	0.0000	0.000	0.000
		0	0.0000	0.0000	0.0000	0.0000	0.0000
		00	0.0000	0.000	0.0000	0.0000	0.0000
	PEI HTDRO (ASSUME MOIOR UIL) DHEND!	o c	0,000	0,000	0.000	0.000	0,000
	SILVER	0	0.000	0.000	0.000	0000	0000
1,1,2,2-		0	0.000	00000	0.0000	0.0000	0.0000
		0	0.000	0.000	0.000	0.000	0.000
	TOLUENE	0	0.000	0.000	0.000	0.000	0.000
	TRICHLOROETHENE	0	0,000	0.000	0.000	0.000	0.000
	TRICHLOROFLUOROMETHANE	0	0.000	0.000	0.000	0.000	0.000
	VINYL CHLORIDE	0	0.000	0.000	0.000	0.000	0.000
	XYLENES	0	0.000	0.000	0.000	0.000	0.000
	ZINC	0	0.000	0.000	0.000	0.000	0.000
	$Col 7 = (col 2) \times (2 L/day)$	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<b>TS</b>	SUMS =	31306.5532	15.8228	8.1060
	8 = (col 2) x (col	(0.0065 kg/day)	3	LOG OF SUMS =	4.4956	1.1993	0.9088
	+ (/ 103) = 6						
	Col 10 = (col 9) / (col 5)						
	12 = (col 2) /						

TABLE P-11 NWLF HAZARD WORKSHEET IRP STAGE 2 SELFRIDGE, MICHIGAN

6 BIOACCUMULATION FACTOR (L/KG)	280 4 4 32 32 660 50 200	690 690 740 7.2 8 8 120 150 89	100 300 400 430 100 120 1.7	7.9 44 83 17 74 0.01 7.2 320 1000
5 TERRESTRIAL BI EFFECTS BENCHMARK (ug/L)	5000 100 100 100		\$000 \$000 200 200 37300	100
4 AQUATIC EFFECTS BENCHMARK EF (ug/L)	360 14500 5300 1700 0.66	1120 2850 118000 135000 11000 52100 2120 32000	400 34 350 193000 2300 1100 8280 8280 55 28800 10000	9320 5280 17500 45000 11000 4800 381000 13500 180
3 HEALTH EFFECTS BENCHMARK (ug/day)	0.04 0.15 30 10000 0.016	2.6 460 460 116 116 10000 5.0 10000	150 100 0.25 4 260 260 0.7 280 13 61.9 680.9	10 24 42 42 11 00.015 1000 1000
2 CONCENTRATION (ug/L)	146000 242 242 1310 4 20 188		204000 592 7780 2 269 1700	287 943 (0.0065 kg/day)
1 CONTANINANT NAME NULF SURFACE WATER CONTANINANT HAZARD	ALUMINUM ARSENIC BARIUM BENZENE BUTYLBENZYLPHTHALATE CADMIUM CHROMIUM			TETRACHLOROETHANE TETRACHLOROETHENE TOLUENE TRICHLOROFTHENE TRICHLOROFTUDROMETHANE VANDALIUM VINYL CHLORIDE XYLENES ZINC Col 7 = (col 2) x (2 L/day) Col 8 = (col 2) x (col 6) x Col 10 = (col 9) / (col 8) Col 10 = (col 9) / (col 4) Col 12 = (col 2) / (col 5)
NULF SURF		1,4- 1,3- 1,1- TRANS-1,2- 2,4-	4	1,1,2,2-

TABLE P-11 (continued)
NWLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

SCONTAMINANT NAME NULF SURFACE WATER CONTAMINANT HAZARD	I CONTAMINANT NAME CONTAMINANT HAZARD	7 DRINKING WATER INTAKE (Ug/day)	8 FOOD INTAKE (ug/day)	9 TOTAL INTAKE (ug/day)	10 HEALTH HAZARD QUOTIENT	11 AQUATIC HAZARD QUOTIENT	12 TERRESTRIAL HAZARD QUOTIENT
ALUMINUM		292000	0.0000	292000.0000	97333.3333	0.000	29.2000
BARIUM		2620	34.0600	924.4400	23111.0000	0.6722	2.4200
BENZENE		0	00000	0.0000	0.000	0.000	0.000
BUTYLBENZYLPHTHALATE	LPHTHALATE	<b>&amp;</b>	17.1600	25.1600	0.0025	0.0024	0000
CADMIUM		07	9.5000	46.5000	2.3250	30.3030	2,0000
CHROMIUM		376	244.4000	620.4000	38775,0000	11.7500	1.8800
	176116	9/4	324.8700	800.8700	0.4004	25.8696	1.1900
1.4- DICALOROBENZENE	NZENE	<b>&gt;</b> c	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	HANE	0	0000	00000	0.0000	0.0000	0.0000
TRANS-1, 2- DICHLOROETHENE	FEE	0	0,000	0.000	00000	0,000	0000
DICHLOROFLL	DICHLOROFLUOROMETHANE	0	0.0000	0.000	0.000	0.000	00000
DIETHYLPHTHALATE	HALATE	0	0.0000	0.000	0.000	0.000	000000
Z,4- DIMETHYLPHENOL	NOL	0	0.000	0000.0	0.000	0.0000	0.000
DI-N-BUTYLPHTHALATE	PHINALATE	2	0.5785	2.5785	0.0003	0.0011	0.000
TOON	¥	0	0.0000	0.000	0.000	0.000	000000
LEAD		408000	1157 7000	0000,000045	3604.0000	510.0000	40.8000
MANGANESE		15560	20228 0000	2338.4000 35788 0000	173152 0000	17.4118	78 2000
METHYLENE CHLORIDE	CHLORIDE	0	0 000	0000	0000	0000	28.9000
NAPHTHALENE		) <b>4</b>	5.5900	9.5900	0.000.0	0,000	0000
		538	174.8500	712,8500	2.7417	0.2445	1.3650
4- NITROPHENOL		0	0.0000	0.0000	000000	0.000	0.000
PENTACHLOROPHENOL		0	0.000	0.000	0.000	0.000	0.0000
PET HYDRO (ASSUME		0	0.000	0.000	0.000	00000	0.000
PEI HTDRU (ASSUME	ASSUME MULUK UIL)	3400	0.0000	3400.0000	54.9273	0000.0	0.000
STIVED		<b>-</b>	0.000	0.000	00000	0.0000	0.0000
1.1.2.2- TETRACHLOROFTHANE	FTHANE	<b>-</b>	0000	0,000	0,000	0.0000	0.0000
	ETHENE	0	0.000	0000	000000	0.000	0,000
TOLUENE		0	0.0000	0.000	0.0000	00000	0.000
TRICHLOROETHENE	HENE	0	0.000	0.000	0.000	0.0000	0.000
TRICHLOROFL	TRICHLOROFLUOROMETHANE	0	0.000	0.000	0.000	0.000	0.000
VANDALIUM	:	574	0.0187	574.0187	38267.9103	0.0598	2.8700
VINYL CHLORIDE	10E		0.0000	0.000	0.000	0.000	0.000
ATLENES		0	0.000	0.000	0.000	0.000	0000.0
ZINC		1886	6129.5000	8015.5000	0.8016	5.2389	0.4715
001 7 = (col	2) x (2 L/day) 2) x (col 6) x 7) + (col 8)	(0.0065 kg/day)	POOT SWINS	SUMS = LOG OF SUMS =	362021.5940 5.5587	623.8730 2.7951	121.1949
10 = 1	9) / (col 2) / (col						
Col 12 = (col	2) /						

# East Ramp (ERMP) Defense Priority Model List of Comments Used to Justify Scoring

Item <u>Number</u>	<u>Comment</u>
1.	Contaminants have been detected in the surface water at the ERMP. Contaminants include petroleum hydrocarbons, xylenes, toluene, ethylbenzene and benzene. Score as 100.
11.	The ERMP is the site of a former fuel spill. Score under the waste containment effectiveness factor category as a spill. No known cleanup action has occurred at the site. Contaminants may be exposed at the surface and could be transported by stormwater runoff into the storm drainage network. These waters are untreated and would be discharged either into Lake St. Clair or the Clinton River. Score as 1.0.
13.	Contaminants have been detected in the groundwater. These contaminants were petroleum hydrocarbons and ethylbenzene. Score as 100.
21:	No known containment features exist at the site. None were constructed as a result of the spill. Thus, contaminants are uncontained. No known groundwater cleanup action has been undertaken. No engineered covering of the spill site is known to have occurred. Score as 1.0.
23-42.	Scores based on Contaminant Hazard Scoring Sheets for groundwater and surface water using sums and logs of benchmarks and intakes.
43.	No drinking water is obtained from surface water within three miles of the site. The city intake is more than three miles from the site. The scoring is based on both the Clinton River and Lake. St. Clair surface water because stormwater is discharged, untreated, into both water bodies by the storm drainage system.
44.	The lake and river are used for recreational fishing. It is greater than 3 miles to the water treatment plant intake. Score as 2.

45.

The population within 1,000 feet of the site is greater than 100 people. This would include both a daytime population and resident population

living on the base. Daytime population includes ground maintenance people and workers in buildings and hangers around the perimeter of the site. Score as 3.

- 46. Distance to the nearest base boundary is approximately 800 feet. Score as 3.
- Dominant land use within one mile of the site is residential. Score as 3.
- Lake St. Clair would have the closest biota and habitats possibly affected by surface water discharged from the ERMP. The stormwater lift pump stations discharge untreated stormwater from the site into the lake as well as the river. This could affect spawning, fishing and the general management of the lake. Score as 2.
- No known critical environments occur within one mile of site. Score as 0.
- There are no known wells downgradient of the site. Wells within one mile of the site are not known to be used for supplying drinking water, because all domestic water is supplied by the city water plant. Score as 0.
- Based on potentiometric map information groundwater is intercepted by the stormwater drainage system and is then discharged to the lake or river. The estimated time for groundwater to be intercepted is approximately 4.7 to 7.1 years. However, there are no surface water intakes within three miles of a discharge point on either the lake or river. Score as 0.
- The groundwater below the ERMP is not being used for any domestic or drinking purpose. Water is supplied by the city. No wells within one mile of the site are known to produce drinking water. Score as 0.
- No population would be at risk because the groundwater beneath the site is not being used. No wells are producing this water. Domestic water is supplied by the city. No downgradient users of water are known to exist. Score as 0.
- 58. See question #45. Population within 1,000 feet of the site is greater than 100. Score as 3.

- 59. See question #46. Distance to the nearest base boundary is 800 feet. Score as 3.
- 62. Estimated time for groundwater to reach the storm drainage system and be discharged to the lake or river is approximately 4.7 to 7.1 years. Score as 3.
- Groundwater would be discharged both to Lake St. Clair and the Clinton River. Discharge to the lake could affect fish and spawning. Lake St. Clair is a managed area for fishing. Score as 2.
- No known critical environments occur within one mile of the site. Score as 0.

Site identification: East Ramp (Site 07) - ERMP

SUI	RFACE WATER PATHWAYS					
Ob:	served releases	Score (circle one)	Multiplier	Product (score x mult.)	Max. score	
1.	Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0 100	1	100	100	
Pat	hway characteristics		·			
2.	Distance to nearest surface water	0 1 2 3	4		12	
3.	Net precipitation	0 1 2 3	1		3	
4.	Surface erosion potential	0 1 2 3	4		12	
5.	Rainfall intensity	0 1 2 3	4		12	
6.	Surface permeability	0 1 2 3	3		9	
7.	Sum of items 2 through 6				48	
8.	Normalized score (multiply item 7 x 100/48)					
9.	Flooding potential	0 1 2 3	8		24	
10.	Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			100		
11.	Waste containment effectiveness factor (Table 2)			1.0		
12.	Final score for surface water pathways (multiply ite	em 10 x item	m 11)	100		

# COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the ERMP.

Prepared by Con D. Clander 9 Dec 58 Checked by RHG 12/9/88

Site identification: ERMP

DUNDWA	TER PATHWAYS				
<u>Obs</u>	erved releases	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
13.	Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 100	1	100	100
Path	nway characteristics				
14.	Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9		27
15.	Permeability of the unsaturated zone	0 1 2 3	5		15
16.	Infiltration potential	0 1 2 3	5		15
17.	Sum of items 14 through 16				57
18.	Normalized score (multiply item 17 x 100/57)		•		
19.	Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table				
		0 1 2 3	5		15
20.	Adjusted pathways score. If item 13 is 100, enter 1 If item 13 is 0, enter sum of items 18 and 19.	.00.			
	If sum exceeds 100, enter 100.			100	
21.	Waste containment effectiveness factor (Table 5)			1.0	
22.	Final score for groundwater pathways (multiply item	20 x item 21	1)	_100	

COMMENTS ON GROUNDWATER PATHWAYS

CONTA	MINANT HAZARD SURFACE WATER			
	entaminants have been detected in surface water (score of 100 in item uminants have not been detected (score of 0 in item 1), complete items entaminants, as appropriate.	1), complet 29 through	e items 23 thr 32. Attach F	ough 28. If Mazard Worksheet or lis
		Score (circle	Result	Logarithm (base 10)
23.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	one)	1014.8283	3.0064
24.	Human health hazard score	0 1 2 4	6)	
25.	Normalized human health hazard score (multiply item 24 x 100/6)		_100	
26.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		0.1799	-0.7449
27.	Ecological hazard score	0 1(2)3		
28.	Normalized ecological hazard score (multiply item 27 x 100/6)	0 1 2 3	3 <u>3.333</u>	
29.	Maximum human health hazard index	0 1 2 3 4	•	
30.	Normalized human health hazard score (multiply item 29 x 100/9)	30,03	Contamir	mant:
	Maximum ecological hazard index	0 1 2 4 6	Contamir	
32.	Normalized ecological hazard score (multiply item 31 x 100/6)			
ONTAM	INANT HAZARD GROUNDWATER			
f cons	taminants have been detected in groundwater (score of 100 in item 13) of been detected (score of 0 in item 13), complete items 39 through 42 inants, as appropriate.	, complete : 2. Attach 1	items 33 throu Hazard Workshe	gh 38. If contaminant et or list of
33.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	2	42 <u>7.702</u> 9	2.6311
34.	Human health hazard score	0 1 2 4 6		2.0311

# Sum of human health hazard quotients (from column 10 of Hazard Worksheet) 34. Human health hazard score 35. Normalized human health hazard score (multiply item 34 x 100/5) 36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet) 37. Ecological hazard score 38. Normalized ecological hazard score (multiply item 37 x 100/5) 39. Maximum human health hazard index 30 1 2 3 4 5 6 7 8 9 Contaminant: 40. Normalized human health hazard score (multiply item 39 x 100/9)

41. Maximum ecological hazard index

42. Normalized ecological hazard score (multiply item 41 x 100/6)

0 1 2 4 6

Contaminant: \_\_

Site identification: ERMP

HUMA	N JEALTH RECEPTORS SURFACE WATER PATHWAY	Score (circle one)	Multiplier	Product (score x mult.)	'Max. score
43.	Population that obtains drinking water from potentially effected surface water body(ies) within 3 miles (4.8 km) downstream	①123	3	0	9 .
44.	Water use of nearest surface water body(ies)	0 123	3	6	9
45.	Population within 1000 ft (305 m) of the site	0 1 2 3	1	3	3
46.	Distance to the nearest installation boundary	0 1 23	1	3_	3
47.	Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 23	1	3_	3
48.	Sum of items 43 through 47			15	27
49.	Final score for human health receptors on surface water pathways (multiply item $48 \times 100/27$ )		5 <u>5.556</u>		
ECOL	OGICAL RECEPTORS SURFACE WATER PATHWAYS				
50.	Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 123	5	10	15
51.	Presence of "critical environments" within 1 mile (1.5 km) of the site	3	1	0	3
52.	Sum of items 50 and 51				18
53.	Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)		5	5.556	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: ERMP

	EALTH RECEPTORS GROUNDWATER PATHWAY			
		Score (circle one)	Multiplier	Product No. (score x smult.)
54	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	①1 2 3	9	0 _ 2
55.	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	①1 2 3	5	01
56.	Groundwater use of the uppermost aquifer	(O)1 2 3		0
57.	Population potentially at risk from groundwater contamination	06 9 12	1	0 12 0 36
50	Paral Land	18 24 27 36		
	Population within 1000 ft (305 m) of the site	0 1 2(3)	1	3 3
	Distance to the nearest installation boundary	0 1 2(3)	1	3
	Sum of items 54 through 59			
51.	Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			
LOGICA	L RECEPTORS GROUNDWATER PATHWAYS			6.25
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 2(3)	3	9 g
	Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 123	3	6 g
64.	Presence of "critical environments" within 1 mile (1.6 km) of the site	3	1	О з
65.	Sum of items 62 through 64			
66.	Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			15 21 71.429

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

#### SCORING SUMMARY SHEET

•		Pat	hways scor	•	Contaminant hazard score	B	leceptors scor	: <u>•</u>		Overall score
67.	Surface water/human health scores	(	100 item 12	×	100 item 25/30	x	55.556 item 49	)	/10,000 -	55.556
68.	Surface water/ecological scores	(	100 item 12	×	33.333 item 28/32	x	55.556 item 53	)	/10,000 =	18.518
69.	Groundwater/human health scores	(	100	x	100 item 35/40	x	6.25 item 61	)	/10,000 =	6.25
70.	Groundwater/ecological scores	(	100	x	16.667	x	71.429	)	/10,000 =	11.905

#### OVERALL SITE SCORE:

71. 
$$\frac{55.556}{(\text{item } 67)^2 \times 5} + \frac{18.518}{(\text{item } 68)^2} + (\frac{6.25}{(\text{item } 69)^2})^2 \times 5 + (\frac{11.905}{(\text{item } 70)^2})^2 = \frac{16112.183}{(\text{item } 70)^2}$$

72. Overall site score 
$$16112.183/3.464 = 36.644 = 37$$

TABLE P-12
ERMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

### ARSENIC  ### BUTTHERNZYLPHTHALATE  ### BUTTHALATE  ### BUTTHERNZYLPHTHALATE  ### BUTTHERNZYLPHTHALATE  ### BUTTHERNZYLPHTHALATE  ### BUTTHERNZYLPHTHALATE  ### BUTTHERNZYLPHTHALATE  ### BUTTHERNZYLPHTHALATE  ### BUTTHALATE  ### BUTTHERNZYLPHTHALATE  ### BUTTHALATE  ### BUTTHALATE  ### BUTTHALATE  ###	CONTAMINANT NAME ERMP GROUNDUATER CONTAMINANT HAZARD	CONCENTRATION (ug/L)	HEALTH EFFECTS BENCHMARK (ug/day)	AQUATIC EFFECTS BENCHMARK (ug/L)	TERRESTRIAL EFFECTS BENCHMARK (ug/L)	BIOACCUMULATION FACTOR (L/KG)
BUTTLERIZE BUTTLERIZE	1		0.04	360	100	280
BUTYLEENZYLPHTHALATE 10000 1700  SCANHUM 20 0.046  COPPER 2000 9.2  CORNALLINA 2000 9.2  CORNALLINA 2000 9.2  DICHLOROGENZENE 460 1120  DICHLOROGENZENE 460 1120  DICHLOROGENZENE 460 1120  DICHLOROGENZENE 5.6 113000  DICHLOROGENZENE 118000 52100  DICHLOROGENZENE 118000 52100  DICHLOROGENZENE 118000 52100  DICHLOROGENZENE 118000 52100  DICHLOROGENZENE 6 2200 33000  METHYLPHTHALATE CHORDE 6 2200 33000  MAPHYLENE CHORDE 75 2000 11000  MAPHYLENE CHORDE 75 2000 23000  MAPHYLENE CHORDE 75 2000 11000  ETA APPROACH CHORDE 75 2000 11000  ETA APPROACH CHORDE 75 2000 11000  ETA COLUMB 1 2000 11000  ETA CHORDE 11000 11000  ETA CHORDE 11000 11000  ETA CHORDE 11000 11000  ETA CHORDE 11000 11000  ETA CHORDE 11000 11000  ETA CHORDE 11000 11000  ETA CHORDE 11000 11000  ETA COLUMB 110000  ETA COLUMB 11000  ETA COLUMB 11000  ETA COLUMB 11000  ETA C	BARIUM		0.15	14500		4 CZ
CADMIUM CADMIUM CADMIUM CADMIUM CADMIUM COPPER COPPE COPPER COPPE COPPER COPPER COPPER COPPER COPPER COPPER COPPER COPPER COPPE COPPER COPPER COPPE CO	BUTYLBENZYLPHTHALATE		10000	1700		. 3
Chickentum	CADMIUM		20	99.0	10	5 -
COUNTINGENTAINE   COOPER   C	CHROMIUM		0.016	16	100	2
1120   1120	COPPER		2000	9,2	200	2
DICHLOROBENZENE  DICHLOROBENZENE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  DICHLOROGETHANE  ELAD  DICHLOROGETHANE  ELAD  DICHLOROGETHANE  ELAD  DICHLOROGETHANE  ELAD  ANAPHTHALENE  ELAD  DICHLOROGETHANE  ELAD  ANAPHTHALENE  ELAD  ANAPHTHALENE  ELAD  ANAPHTHALENE  ELAD  ANAPHTHALENE  ELAD  ANAPHTHALOROGHENOL  BETTACHLOROGHENOL  ANAPHTHALOROGHENOL  BETTACHLOROGETHANE  TETTACHLOROGETHANE  TETTACHLOROGETHANE  TETTACHLOROGETHANE  TETTACHLOROGETHANE  TRICHLOROGETHANE  TRICHLOROGE			097	1120		069
DICHLORGETHANE   15   118000			097	2850		2
DICHLOROETHENE  DICHLOROETHENE  DICHLOROETHENE  DICHLOROETHENE  DICHLOROETHENE  1000 521000 52100 52100 52100 52100 521000 52100 52100 52100 52100 52100 52100 52100 521	1,1- DICHLOROETHANE		15	118000		
11000   1100   1100   1100   1100   1100   110000   110000   110000   1100000   110000   110000   1100000   1100000   110000   110000   1100	1,2- DICHLOROETHENE		2.6	135000		7
DIRETHYLPHTHALATE  DIMETHYLPHTHALATE  9.6 2100  210 34  LEAD  HETHYLERNZENE  ETHYLBERNZENE  ETHYLBERNZENE  ETHYLERNZENE  LEAD  HETHYLENE  HETHYLENE  HICKOLLORDHENOL  PET HYDRO (ASSUME MOTOR OIL)  FET HYDRO (ASSUME MO			116	11000		
Part   Part	DIETHYLPHTHALATE		10000	52100		-
ETHYLBENZENE  LEAD  LEAD  LEAD  LEAD  LEAD  LEAD  LEAD  AMENTYLENE  LEAD  AMENTYLENE  LEAD  AMENTYLENE  LEAD  AMENTYLENE  NITROPHENOL  SILVER  PET HYDRO (ASSUME MOTOR OIL)  PET HYDRO (ASSUME MOTOR OIL)  SILVER  TETRACHLOROFTHENE  TETRACHLOROFTHENE  TETRACHLOROFTHENE  TETRACHLOROFTHENE  TETRACHLOROFTHENE  TETRACHLOROFTHENE  TETRACHLOROFTHENE  TRICHLOROFTHENE  TR			9.6	2120		-
LEAD METHYLENE CHLORIDE  4 193000  4 193000  4 193000  4 193000  4 193000  4 193000  4 193000  4 1000  5 280  6 100  7 8280  7 8280  7 8280  8 10000  8 1 1 10000  8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		9	2200	32000		7
METHYLENE CHLORIDE         4         193000           MAPHTHALENE         280         2300           MITKEL         260         1100           MITROPHENOL         0.7         8280           PET HYDRO (ASSUME JP-4)         2000         13         28800           PET HYDRO (ASSUME MOTOR OIL)         2000         1.2         28800           PET HYDRO (ASSUME MOTOR OIL)         2000         1.2         1.2           PET HYDRO (ASSUME MOTOR OIL)         2000         20         1.2           PHET HYDRO (ASSUME MOTOR OIL)         2000         20         1.2           TETRACHLOROFTHANE         4         5280         10000           TRICHLOROFTHENE         4         5280           TRICHLOROFTHENE         11         11000           TRICHLOROFTHENE         11         11000           VINYL CHLORIDE         42         45000           VINYL CHLORIDE         16         13500           ZINC         16         16           Col 7 = (col 2) x (col 6)	LEAD		100	34	2000	m
NAPHTHALENE   280   2300	METHYLENE CHLORIDE		4	193000		7
NICKEL  NITROPHENOL  NITROPHENOL  NITROPHENOL  PENTACHLOROPHENOL  200  13  28800  55  PET HYDRO (ASSUME JP-4)  2000  13  28800  61.9  PHENOL  SILVER  SILVER  TETRACHLOROETHANE  TOLUENE  TRICHLOROETHENE  TRICHLO	NAPHTHALENE		280	2300		430
NITROPHENOL  NITROPHENOL  PENTACHLOROPHENOL  280 55 PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)  PHENOL  SILVER  TETRACHLOROETHENE  TETRACHLOROETHENE  TRICHLOROETHENE  TRICHLO			260	1100	200	-
PENTACHLOROPHENOL  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)  PET HYDRO (ASSUME MOTOR OIL)  PHENOL  SILVER  TETRACHLOROFTHENE  TETRACHLOROFTHENE  TRICHLOROFTHENE  T			0.7	8280		
PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)  PET HYDRO (ASSUME MOTOR OIL)  SILVER  SILVER  TETRACHICOROFTHANE  TETRACHICOROFTHENE  TRICHICOROFTHENE  HENOL		280	55	37300	780	
PET HYDRO (ASSUME MOTOR OIL) PHENOL SULVER SILVER TETRACHLOROETHANE TETRACHLOROETHANE TETRACHLOROETHANE TRICHCOROETHANE TRICHC	SSUME JP-4)	2000	13	28800		=
PHENOL PHENOL PHENOL SILVER SILVER TETRACHLOROETHANE TETRACHLOROETHANE TETRACHLOROETHANE TOLUENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHA	DRO (ASSUME MOTOR		61.9			•
STLVER   COURTHANE	PHENOL		9890	10000		1.7
TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHENE  TRICHLOROETHUNE  VINYL CHLORIDE  XYLENES  ZINC  Col 7 = (col 2) x (2 L/day)  Col 8 = (col 2) x (col 4)  Col 10 = (col 9) / (col 4)	TETPACHI ODGE		07	2.1		
CHLOROETHENE	TETPACH OPPE		91	5280		**/
CHLOROETHENE	TOLUENE		7%	17500		
11000   11000   11000   11000   11000   11000   11000   11000   11000   11000   11000   11000   11000   11000   1100000   1100000   1100000   1100000   1100000   1100000   1100000   11000000   11000000   1100000   1100000   1100000   1100000   1100000   11000000   1100000   1100000   1100000   1100000   1100000   1100000   1100000   1100000   1100000   1100000   1100000   1100000   11000000   1100000   1100000   1100000   1100000   1100000   11000000   1100000   1100000   1100000   1100000   1100000   11000000   11000000   11000000   11000000   11000000   11000000   1100000000	TRICHLOROETHENE		42	45000		17
17 = (col 2) x (2 L/day)  18 = (col 1) x (col 4)  19 = (col 2) y (col 4)  10 = (col 2) y (col 4)	TRICHLOROFLUOROMETHANE		=	11000		7.2
15500   16   15500   16   15500   16   15500   16   15500   16   16   16   16   16   16   16	HLORE		1000	381000		7.2
(C	XYLENES		16	13500		'n
7 = (col 2) x (2 L/day) 8 = (col 2) x (col 6) x 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4)	ZINC		10000	180	2000	10
8 = (col 2) × (col 6) × 9 = (col 7) + (col 8) 10 = (col 9) / (col 3) 11 = (col 2) / (col 4) 12 = (col 2) / (col 5)	7 = (col 2) x	* * * * * * * * * * * * * * * * * * *	; ; ; ; ; ; ; ; ; ; ; ;	; ; ; ; ; ; ; ; ; ; ;	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	# # # # # # # # # # # # # # # # # # #
9 = (col 7) + (col 10 = (col 9) / (col 11 = (col 2) / (col 13 - (col 2) / (col	8 = (col 2) x (col	(0.0065 kg/day)				
11 = (col 2) / (col 13	100) + (2 100) = 6					
13 = (501 2) / (50)	11 = (col 3) / (col 3)	٠				
	103) / (2) (2) = 11					

TABLE P-12 (continued)
ERMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

ARSENIC BARTUM BENZENE BUTYLBENZYLPHTHALATE CADHIUM CCAPPER 1,4- DICHLOROBENZENE 1,1- DICHLOROBENZENE 1,1- DICHLOROETHANE 1,1- DICHLOROETHANE 1,1- DICHLOROETHANE 2,4- DIMETHYLPHENOL ETHYLBENZENE LEAD HETHYLENE CHCON COPPER 1,1- DICHLOROETHANE 0 0.0000		0.0000	0.0000	0.0000
BENZENE  BENZENE  BUTYLEENZYLPHTHALATE  CADMIUM  CHROWIUM  COPPER  DICHLOROBENZENE  DICHLOROBENZENE  DICHLOROFTHANE  DICHLOROFTHANE  DICHLOROFTHONE  DICHLOROFTHONE  DICHLOROFTHONE  DISTHYLPHTHALATE  DISTHYLPHTHALATE  DISTHYLPHENOL  ETHYLBENZENE  LEAD  MAPHTHALENE  NAPHTHALENE  NAPHTHALENE  DICHLOROPHENOL  OHAPHTHALENE  NAPHTHALENE  DICHLOROPHENOL  OHAPHTHALENE  DICHLOROPHENOL  OHAPHTHALENE  DICHLOROPHENOL  OHAPHTHALENE  DICHLOROPHENOL  OHAPHTHALENE  DICHLOROPHENOL  OHAPHTHALENE  OHAPHTHALENE  DICHLOROPHENOL  OHAPHTHALENE  OHAPHT		0.0000	0.000	0.000 0.0000 0.0000 0.0000 0.0000 0.0000
BENZENE  BUTYLBENZYLPHTHALATE  CADMIUM  COPPER  COPPER  COPPER  COPPER  DICHLOROBENZENE  DICHLOROBENZENE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DISTHYLPHENOL  ETHYLBENZENE  CADD  MAPHTHALENE  MATHOROFASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)  PET HYDRO (ASSUME MOTOR OIL)		0.0000	0.000	0.000 0.0000 0.0000 0.0000 0.0000 0.0000
BUTYLBENZYLPHTHALATE 0  CADMIUM 0  CHROMIUM 0  CHROMIUM 0  COPPER 0  DICHLOROBENZENE 0  DICHCOROBENZENE 0  DICHCOROBENZENE 0  DICHCOROBENZENE 0  DICHCOROETHANE 0  DICHCOROETH		0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.000	0.000
CADHIUM CHROWIUM CHROWIUM COPPER DICHLOROBENZENE DICHLOROBENZENE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROFTHANE ONITROPHENOL ONITROPHENOL OPET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME MOTOR OIL) OCHOROFTHANE OCHOROFTHA	<b>2</b>	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000000000000000000000000000000000000	0.000 0.0000 0.0000 0.0000 0.0000
CHROMIUM COPPER COPPER COPPER DICHLOROBENZENE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROETHANE DICHLOROETHONE THYLPHITALATE CEAD DIMETHYLPHITALATE O METHYLPHITALATE O MAPHITALENE NAPHITALENE O MITROPHENOL O PET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME MOTOR OIL) O	<b>2</b>	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000	0.000
COPPER  COPPER  DICHLOROBENZENE  DICHLOROBENZENE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  DICHLOROETHANE  ONITHALENE  NAPHTHALATE  ONITHALENE  NAPHTHALENE  ONITHALENE  ON	<b>.</b>	0.0000	0.0000	0.0000
DICHLOROBENZENE 0 DICHLOROBENZENE 0 DICHLOROGENANE 0 DICHLOROETHANE 0 DICHLOROETHENE 0 DICHLOROMETHANE 0 DIETHYLPHTHALATE 0 DIETHYLPHENOL 0 DIETHYLPHENOL 0 MAPHTHALENE 0		0.0000	0.0000 0.0000 0.0000 0.0000	0.0000
DICHLOROBENZENE 0 DICHLOROETHANE 0 DICHLOROETHANE 0 DICHLOROFLUOROMETHANE 0 DIETHYLPHENOL 0 DINETHYLPHENOL 0 DIMETHYLPHENOL 0 MAPHTHALENE 0 MA		0.0000	0.0000	0.0000
DICHLOROETHANE  DICHLOROETHENE  DICHLOROETLUOROMETHANE  DIETHYLPHTAALATE  DISTHYLPHTAALATE  DIMETHYLPHENOL  ETHYLBENZENE  ETHYLBENZENE  MAPHTHALENE  NAPHTHALENE		0.0000	0.0000	0.0000
DICHLOROETHENE 0 DICHLOROFLUOROMETHANE 0 DIETHYLPHTAALATE 0 DINETHYLPHENOL 0 DINETHYLPHENOL 12 ETHYLBENZENE 0 DIMETHYLPHENOL 0 METHYLENE CHLORIDE 0 NAPHTHALENE 0 NAPHTHALENE 0 NAPHTHALENE 0 NAPHTHALENE 0 NATROPHENOL 0 PENTACHLOROPHENOL 0 PENTACHLOROPHENOL 0 PET HYDRO (ASSUME MOTOR OIL) 0		0.0000	0.000	0.0000
DICHLOROFLUOROWETHANE  DIETHYLPHTHALATE  DIMETHYLPHENOL  ETHYLBENZENE  LEAD  METHYLENE CHLORIDE  NORTHILENE  NITROPHENOL  NITROPHENOL  PENTACHLOROPHENOL  PENTACHLORO		0.0000		2000
DIETHYLPHTHALATE 0 DIMETHYLPHENOL 0 DIMETHYLPHENOL 0 ETHYLBENZENE 12 12 LEAD 0 METHYLENE CHLORIDE 0 MAPHTHALENE 0 NITKOPHENOL 0 MITROPHENOL 0 PENTACCHLOROPHENOL >.</b>	0.0000	0.000	0,000	
DIMETHYLPHENOL  ETHYLBENZENE  LEAD  LEAD  METHYLENE CHLORIDE  NAPHTHALENE  NITROPHENOL  PENTACHLOROPHENOL  PENTACHLOROPHENOL  O  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)  O		00000	0.000	0.000
ETHYLBENZENE 12 1 LEAD LEAD METHYLENE CHLORIDE 0 NAPHTHALENE 0 NITCPHENOL 0 PENTACHLOROPHENOL 0 PENTACHLOROPHENOL 0 PET HYDRO (ASSUME JP-4) 4000 156	<b>~</b>		0.000	00000
LEAD METHYLENE CHLORIDE NAPHTHALENE NICKEL NITROPHENOL PET HYDRO (ASSUME JP-4) OPET HYDRO (ASSUME MOTOR OIL) OPET HYDRO (ASSUME MOTOR OIL)		0.0106	0.0002	0.000
METHYLENE CHLORIDE 0 NAPHTHALENE 0 NICKEL 0 NITROPHENOL 0 PET HYDRO (ASSUME JP-4) 0 PET HYDRO (ASSUME MOTOR OIL) 0		0.000	0.000	0.000
NAPHTHALENE  NICKEL  NITROPHENOL  PENTACHLOROPHENOL  0  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)		0.000	0.000	0.000
NICKEL NITROPHENOL 0 PENTACHLOROPHENOL 0 PET HYDRO (ASSUME JP-4) 4000 PET HYDRO (ASSUME MOTOR OIL)		0.000	0.000	0.000
NITROPHENOL  PENTACHLOROPHENOL  PET HYDRO (ASSUME JP-4)  PET HYDRO (ASSUME MOTOR OIL)  0		0.000	0.000	0.000
0 JP-4) 4000 HOTOR OIL) 0		0.0000	0.000	0000.0
ADTOR OIL) 4000		0.000	0.000	0.000
SOLON OIL)	556	427.6923	0.0694	0.0000
	00000	0.000	0.000	0.000
		0,000	0.000	0,000
o o o o o o o o o o o o o o o o o o o	0000	0,000	0.000	0.000
TETDACHLONOFTHENE		0000	0000	0000
, c		0000	0000	0000
DETHENE		0000	00000	0000
METHANE		0000	0000	0000
0		0.000	0000	0000
		0000	0000	0000
0		0.000	0000	0.000
Col 7 = (col 2) x (2 L/day)	SMUS =	6202.227	0 0696	0000 0
8 = (col 2) x	LOG OF SUMS =	2.6311	-1.1572	ERR
7) + (col 8) 9) / (col 3)				

TABLE P-13
ERMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

MASENIC   MASENIC   0.04   360   100   280   100   280   100   280   100   280   100   280   2		CONTANTION IN NAME NAME SURFACE WATER CONTAMINANT HAZARD	CONCENTRATION (ug/L)	HEALTH EFFECTS BENCHMARK (ug/day)	AQUATIC EFFECTS BENCHMARK (UG/L)	TERRESTRIAL EFFECTS BENCHMARK (ug/L)	BIDACCUMULATION FACTOR (L/KG)	ð
BARIUM         35         0.15         14500           BLAILWH         36         5300         10           BUT/LEBNZYLPHTHALATE         36         5300         10           CADHILW         20         0.66         10           CADHILW         0.016         7.6         10           CADHILW         0.016         7.6         10           COPPER         2000         9.2         200           COPPER         40         1120         200           COPPER         1120         200         3.5           DICHLORGETAME         1120         2.6         13500           DICHLORGETHAME         2.6         13500         2.100           DICHLORGETHAME         2.6         13500         2.100           DICHLORGETHAME         2.6         13500         2.120           DICHLORGETHAME         2.6         1300         3.4         3.500           DICHLORGETHAME         2.0         2.1         3.100         3.4         3.000           LEAD         2.0         2.0         3.2         3.2         3.000           LEAD         4.0         4.0         1.2         3.000         4.0         3.2		ARSENIC		0.04	360	100		: జ
BENTYLERENTY STATE STAT		BARIUM		0.15	14500			7
BUTYLEREYZLPHTHALATE  CADMIUN COPPER COPPE COPPER COPPER COPPER COPPER COPPER COPPE COPPER COPPER COPPER COPPE COP		BENZENE	35	30	5300			3
CADMIUM         CADMIUM         0.016         1.0         <		BUTYLBENZYLPHTHALATE		10000	1700		•	8
COMMUNICATION         0.016         16         100           COMPORE         2000         9.2         200           COMPOREDICATION         460         1120         200           DICHLOROBENZENE         460         2850         2850           DICHLOROBENZENE         2.6         135000         118000           DICHLOROFTHENE         2.6         135000         2120           DICHLOROFTHENE         2.0         2200         3200           DICHLOROFTHENE         2.0         2200         3200           ETHYLENE         1000         3.4         5000           ETHYLENE         1000         3.4         5000           METHYLENE         1000         3.2         3.2           METHYLENE         1000         2.0         3.2           METHYLENE         1000         3.0         3.0           METHYLENE         1000         3.0           METHYLENE		CADMIUM		20	99.0	10		50
COPPER         2000         9.2         200           DICHLORGBEAZENE         460         1120         200           DICHLORGBEAZENE         460         2850         2850           DICHLORGETHANE         15         118000         200           DICHLORGETHANE         16         135000         2120           DICHLORGETHANE         10000         52100         2200           DICHLORGETHANE         20         2200         3200           DICHLORGETHANE         20         2200         3200           DICHLORGETHANE         20         2200         3200           ETHYLEHENOL         20         2200         3200           ETHYLEHENOL         20         2200         3200           ETHYLEHENOL         20         2200         2300           METHYLEHENOL         20         2200         200           METHYLEHENOL         20         220         2300           METHYLEHENOL         20         220         2300           MITROPHENOL         20         13         2880           MITROPHENOL         4600         41,2         4500           MITROPHENOL         40         40         4500		CHROMIUM		0.016	16	100	2	8
DICHLOROBENZENE 460 1120		COPPER		2000	9.5	200		¥
DICHLOROGENZENE   460   2850		DICHLOROBENZENE		097	1120		1 40	: 8
DICHLOROETHANE         15         118000           DICHLOROETHANE         2.6         135000           DICHLOROETHANE         2.6         135000           DICHLOROETHANE         110         52100           DICHLOROETHANE         2.0         2120           DIEFINITALATE         2.0         2200           DIMETHYLEHENOL         2.0         32000           LEAD         2.0         3.0           METHYLEHEN         2.0         3.0           NAPHTHALENE         2.0         2.0           PET HYDRO (ASSUME NOTOR OIL)         4.0         4.0           PHEN UNIVERSITY         4.0         4.0         4.0           SILVER         2.0         2.0 <th< td=""><td></td><td>DICHLOROBENZENE</td><td></td><td>097</td><td>2850</td><td></td><td></td><td>7</td></th<>		DICHLOROBENZENE		097	2850			7
DICHLOROETHENE         2.6         135000           DICHLOROMETHANE         2.6         135000           DICHLOROMETHANE         1000         52100           DICHLOROMETHANE         9.6         2210           DIMETHYLALENE         2.0         2200         3200           ETHYLERAZENE         2.0         2200         3200           ETHYLERAZENE         2.0         3.4         5000           LEAD         4         193000         3.4         5000           HETHYLENE         2.0         100         2.0         2.0         2.0           NICKEL         2.0         1.0         2.0         2.0         2.0         2.0           NICKEL         2.0         1.0         2.0         2.0         2.0         2.0         2.0           NICKEL         2.0         1.0         2.0         2.0         2.0         2.0         2.0         2.0           NICKEL         2.0         2.0         1.2         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0<	+,+	DICHLOROETHANE		5	118000			7
DICHLOROFLUOROMETHANE         116         11000           DICHLOROFLUOROMETHANE         1100         1100           DIEFITYLPHTRALATE         9.6         52100           DIMETHYLPHEALE         20         22200           ETHYLBERZENE         20         22200           LEAD         34         5000           LEAD         34         5000           LEAD         34         5000           LEAD         34         5000           LEAD         35         37300           NATROPHENOL         280         2300           NITROPHENOL         61.9         55         37300           PENTACHLOROPHENOL         61.9         61.9         55         37300           PENTACHLOROPHENOL         61.9         61.9         61.0         61.0         61.0         61.0         61.0         61.0         61.0         61.0         61.0         62.0         7.2         62.0         7.2		DICHLOROETHENE		2.6	135000		7	
DIETHYLPHTHALATE         10000         52100           DIMETHYLPHTHALATE         9.6         2120           DIMETHYLPHENOL         20         2200         32000           LEAD         34         5000           LEAD         34         5000           LEAD         34         5000           LEAD         34         5000           AETHYLENE CHLORIDE         280         2300           NITROLL         280         2300         200           NITROLL         280         280         200           NITROLLOROPHENOL         4600         13         28800         200           PET HYDRO (ASSUME MOTOR OIL.)         4600	_	DICHLOROFLUOROMETHANE		116	11000		•	83
DIMETHYLPHENOL         9.6         2120           ETHYLBERNZENE         20         2200         32000           LEAD         34         5000           LEAD         4         193000         4           LEAD         280         2300         200           MAPHTHALENE         280         2300         200           NICKEL         1100         200         200           NITROPHENOL         280         35300         200           NITROPHENOL         280         55         37300           PET HYDRO (ASSUME MOTOR OIL.)         4600         413         28800         200           PET HYDRO (ASSUME MOTOR OIL.)         6800         10000         37300           PET HYDRO (ASSUME MOTOR OIL.)         6800         10000         4         52800           PHENOL.         2000         1.2         2000         1.2         2000         1.2           PHENOL.         2000         1.2         2.4         45000         2.2         45000         2.2         45000         2.2         45000         2.2         45000         2.2         45000         2.2         45000         2.2         45000         2.2         45000         2.		DIETHYLPHTHALATE		10000	52100			20
ETHYLBENZENE         20         2200         32000           LEAD         100         34         5000           LEAD         100         34         5000           HETHYLENE         280         2300         200           NICKEL         260         1100         200           NITROPHENOL         0.7         8280         200           NITROPHENOL         55         37300           PET HYDRO (ASSUME JD-4)         4600         13         28800           PET HYDRO (ASSUME MOTOR OIL)         641.9             PHENOL         280         10000            SILVER         20         1.2            SILVER         178         4         5280           TOLUENE         178         4         5280           TRICHLOROFTHENE         42         45000            TRICHLOROFTHENE         178         42         45000           TRICHLOROFLUOROFTHENE         11         11000            VINYL CHLORIDE         381000         381000            ZINC         13500             NINT		DIMETHYLPHENOL		9.6	2120			5
LEAD HETHYLENE CHLORIDE A 193000 APHTHALENE NITCKEL NITROPHENOL NI		ETHYLBENZENE	20	2200	32000		. ~	8
METHYLENE CHLORIDE         4         193000           NAPHTHALENE         280         2300           NICKEL         260         1100         200           NITROPHENOL         280         55         37300           PENTACHLOROPHENOL         280         55         37300           PET HYDRO (ASSUME MOTOR OIL.)         4600         41.2         28900         37300           PET HYDRO (ASSUME MOTOR OIL.)         6800         10000         1.2         20         1.2           SILVER         20         1.2         20         1.2         20         1.2           SILVER         10         9320         1.2	_	LEAD		100	34	2000	i Mi	ä
NAPHTHALENE         280         2300           NICKEL         260         1100         200           NITROPHENOL         280         55         37300           PEH TACHLOROPHENOL         4600         13         28800         37300           PET HYDRO (ASSUME MOTOR OIL.)         4600         61.9         7         3800         37300           PHEN DIA PET HYDRO (ASSUME MOTOR OIL.)         6800         10000         1.2         37300           SILVER         20         1.2         1.2         1.2         2.2         1.2         1.2         2.2         1.2         2.2         1.2         2.2         1.2         2.2         1.2         2.2         2.2         1.2         2.2	_	METHYLENE CHLORIDE		7	193000		3	7
NICKEL NITROPHENOL NITROPHENOL NITROPHENOL NITROPHENOL PENTACHLOROPHENOL PENTACHLOROPHENOL PET HYDRO (ASSUME JP-4)	_	VAPHTHALENE		280	2300		4	3
NITROPHENOL PENTACHLOROPHENOL PENTACHLOROPHENOL PET HYDRO (ASSUME JD-4) PET HYDRO (ASSUME JD-4) PET HYDRO (ASSUME MOTOR OIL) PHENOL SILVER TETRACHLOROETHANE TETRACHLOROETHANE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROFTHENE		HICKEL		260	1100	200	-	8
PENTACHLOROPHENOL PET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME JP-4) PET HYDRO (ASSUME MOTOR OIL) PET HYDRO (ASSUME MOTOR OIL) PHENOL SILVER SILVER TETRACHLOROETHANE TETRACHLOROETHANE TOLUENE TRICHLOROETHANE T		4 T T R OP H E N O L		7.0	8280			
PET HYDRO (ASSUME JP-4)         4600         13         28800           PET HYDRO (ASSUME MOTOR OIL)         61.9            PHENOL         6800         10000           SILVER         20         1.2           SILVER         4         5280           TETRACHLOROETHANE         178         24         17500           TETRACHLOROETHENE         178         4         45000           TRICHLOROETHENE         11         11000         381000           VINYL CHLOROETHANE         10000         381000         381000           XYLENES         38         16         13500           ZINC         180         2000         11	-			280	55	37300	2	8
PET HYDRO (ASSUME MOTOR OIL.) PHENOL 6800 10000 51LVER 20 1.2 20 1.2 21LVER 10 9320 10 9320 10 9320 10 9320 10 9320 10 9320 10 1000 110000 1100000 1100000 1100000 11000000	-		7,009	13	28800			20
PHENOL         6800         10000           SILVER         20         1.2           SILVER         10         9320           TETRACHLOROETHANE         4         5280           TOLUSE         4         5280           TOLUSE         42         45000           TRICHLOROFLUDROMETHANE         11         11000           VINYL CHLOROFLUDROMETHANE         381000           VINYL CHLOROFLUDROMETHANE         381000           XYLENES         38         16           ZINC         180         2000	_			61.9				
SILVER       SILVER       SILVER       TETRACHLOROETHANE     10       9320       TETRACHLOROETHENE     4       TOLUSE     42       TRICHLOROFLUOROMETHANE     11       TRICHLOROFLUOROMETHANE     1000       VINYL     381000       XYLENES     38       ZINC     180	_	HENOL		0089	10000		•	۲.
TETRACHLOROETHANE     10     9320       TETRACHLOROETHENE     4     5280       TOLUENE     42     45000       TRICHLOROETHENE     11     11000       TRICHLOROETHENE     1000     381000       VINYL CHLORIDE     381000     381000       XYLENES     180     2000       ZINC     180     2000				20	1.2			N
ACHLOROETHENE         4         5280           ENE         178         24         17500           IL OROETHENE         42         45000           IL OROFLUOROMETHANE         11         11000           IL OROFLUOROMETHANE         381000         381000           L CHLORIDE         38         16         13500           MES         10000         180         2000         1		<b>TETRACHLOROETHANE</b>		10	9320		7	5
ENE 178 24 17500 4.2 17600 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2	_	<b>TETRACHLOROETHENE</b>		7	5280			3
1LOROETHENE 42 45000 1LOROFLUCROMETHANE 11 11000 1000 381000 7 1ES 38 16 13500 3	_	<b>TOLUENE</b>	178	57	17500			33
1LOROFLUOROMETHANE 11 11000 381000 7 2. CHLORIDE 38 16 13500 3 38 16 13500 3 10000 180 2000 10	_	TRICHLOROETHENE		45	45000			1
. CHLORIDE 1000 381000 IES 13500 180 2000 1	<b>-</b>	TRICHLOROFLUOROMETHANE		=	11000		•-	2
1ES 38 16 13500 10000 180 2000 1	-	/INYL CHLORIDE		1000	381000		7	Ň
10000 180 2000 1	^	(YLENES	38	16	13500		×	2
	17	INC		10000	180	2000	10(	8
		9 = (col 7) + (col 10 = (col 9) / (col						
9 = (col 7) + (col 10 = (col 9) / (col	<u> </u>	Col 11 = (col 2) / (col 4)						

TABLE P-13 (continued)
ERMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

ERMP SURFA	1 CONTAMINANT NAME ERMP SURFACE WATER CONTAMINANT HAZARD	7 DRINKING WATER INTAKE (Ug/day)	8 FOOD INTAKE (ug/day)	9 TOTAL INTAKE (ug/day)	10 HEALTH HAZARD QUOTIENT	11 AQUATIC HAZARD QUOTIENT	12 TERRESTRIAL HAZARD QUOTIENT
* * * * * * * * * * * * * * * * * * *	ARSENIC		0.000	0.000	0.000	0.000	0.000
	BARIUM	0	0.000	0.000	0.000	0.000	00000
	BENZENE	02	7.2800	77.2800	2.5760	9900.0	0.0000
	BUTYLBENZYLPHTHALATE	0	0.000	0.000	0.0000	0.000	0.000
	CADMIUM	0	0.000	0.000	0.0000	0.000	0.000
	CHROMIUM	0	0.000	0.000	00000	0.000	00000
	COPPER	0	0.000	0.000	0.000	0.000	0.000
1,4-	DICHLOROBENZENE	0	0.000	0.000	0.000	0.000	0.000
1,3-	DICHLOROBENZENE	0	0.000	0.000	0.000	0.000	0.000
+,	DICHLOROETHANE	0	0.000	0.000	0.000	0.000	0.000
TRANS-1,2-		0	0.000	0.000	0.000	0.000	0.000
	DICHLOROFLUOROMETHANE	0	0.000	0.000	0.000	0.000	0.000
	DIETHYLPHTHALATE	0	0.000	0.000	0.000	0.000	0.000
-7'7	DIMETHYLPHENOL	0	00000	0.000	0.000	0.000	0.000
	ETHYLBENZENE	07	37.7000	77.7000	0.0353	9000.0	0.0000
	LEAD	0	0.000	0.000	0.000	0.000	0.000
	METHYLENE CHLORIDE	0	0.000	0.000	0.000	0.000	0.000
	NAPHTHALENE	0	0.000	0.000	0000	0.000	0.000
	NICKEL	0	0.000	0.000	0.000	0000.0	0.0000
- 7		0	0.000	0.000	0.000	0.000	0.000
		0	0.0000	0.000	0.000	0.000	0.000
		9200	3588,0000	12788.0000	983.6923	0.1597	0.000
	PET HYDRO (ASSUME MOTOR OIL)		0.000	0.0000	0.000	0000.0	0.000
	PHENOL	0	0.000	0.000	0.000	0.000	0.000
	SILVER	0	0.000	0.000	0.0000	0.0000	0.0000
1,1,2,2-		0	0.0000	0.0000	0.0000	0.000	0.0000
		0	0.0000	0.0000	0.000	0.000	0.000
	TOLUENE	356	96.0310	452.0310	18.8346	0.0102	0.000
	TRICHLOROETHENE	0	0.000	0.000	0.000	0.000	0.000
	TRICHLOROFLUOROMETHANE	0	0.000	00000	0000 0	0000 0	0.000
	VINYL CHLORIDE	0	0.000	0.000	0.000	0.000	0.000
	XYLENES	92	79.0400	155.0400	0069.6	0.0028	0.000
	ZINC	0	000000	0.0000	0.000	0.000	00000
	Col 7 = (col 2) x (2 L/day)			SUMS =	1014.8283	0.1799	0.000
	8 = (col 2) x	x (0,0065 kg/dav)	91	LOG OF SUMS =	3.0064	6772 0-	ERR
	9 = (col 7) +		•				
	10 = (col 9) /						
	11 = (col 2) /						
	col 12 = (col 2) / (col 5)						

# Base Coal Storage Pile (BCSP) Defense Priority Model List of Comments Used to Justify Scoring

Item <u>Number</u>	Comment
1.	No surface water samples were collected at the BCSP. Score as 0 and proceed to questions #2-9.
2.	Surface water from the site would be drained and intercepted by the stormwater drainage system. It would then be discharged to the Clinton River. Distance is approximately 5,000 feet. Score as 1.0.
3.	Net precipitation at the base is approximately -1.9 inches. Score as 1.0.
4.	Site is relatively flat with no evidence of rills or vegetation cover. Runoff from site does occur. Score as 1.0. Surface slopes are 2% or less. Particle sizes are large, gravel size pieces of coal.
5.	The rainfall intensity for the area/site is approximately 2.2 inches. Score as 2.
6.	Surface permeabilities of the soils are approximately 10 <sup>4</sup> to 10 cm/sec. Assume average clay content of 30-50%. Hydraulic conductivity of material around BCSP well screens was determined to be 10 cm/sec. Score as 2.
9.	Maps do not indicate flood potential of area at base. Structures exist to prevent flooding and stormwater drainage system discharges excess surface water from the base. Score as 0. Also IRP Presurvey Report, May 1984 reported the area to be outside 100-year floodplain.
11.	No category for the coal pile. Therefore; will treat as a spill site with the coal representing the "spill material" or "contaminant." The coal is exposed and any runoff from the site would not be collected for treatment. Stormwater drainage system would collect the runoff and discharge it, untreated, into the Clinton River. Score as 1.0.

- 13.-20. Score here in based on Contaminant Hazard Score Sheet for groundwater contaminants detected at the site. Contaminants detected were bis(2-ethylhexyl)phthalate, di-n-butylphthalate, pyrene, and elevated metal concentrations. Score as 100.
- 21. According to the scoring guidance a score of 1.0 should be assigned because contaminants are present in the groundwater and no cleanup action has occurred. Score as 1.0.
- No surface water samples were collected. Proceed to questions #29-32 to determine the score.
- 29. Determine the score based on contaminants detected in the groundwater. Log base 10 of health effect benchmark (5644.5) is 4.7516. The log base 10 of the bioaccumulation factor (2221.8) is 3.3467. Score as 2.
- 31. Using highest toxicity benchmark, which is for aquatic hazard, the sum is 34.0480 and its log base 10 is 1.5321. The score is 4.
- No drinking water is obtained from surface water sources within three miles of the site.

  Therefore, no population would be effected. Score as 0.
- Nearest surface water bodies are the Clinton River and Lake St. Clair. These serve as an area for fishing and other recreational uses. The nearest location for the intake of drinking water occurs more than six miles from this site. Score as 2, because it is >3 miles to the drinking water intake.
- 45. Population within 1,000 feet of the site is greater than 100. The population is mainly day-time workers in the engineering building, plumbing shop, paint shop, ground maintenance building and other base buildings. Score as 3.
- Distance to nearest base boundary is approximately 2,500 feet. Score as 3.
- 47. Land use within one mile of the site is dominantly residential. Score as 3.

- 50. Surface water from the site would be directed towards the Clinton River. The stormwater drainage system would intercept and discharge untreated water to the river. Score as 1.0.
- No known critical environments occur within one mile of the site. Score as 0.
- No groundwater from the BCSP site that is potentially contaminated would effect any groundwater well because no producing drinking water wells are known to be downgradient. No wells are known to produce groundwater on the base. Water is supplied by city. Score as 0.
- 55. Groundwater interception by the storm drainage system would occur in approximately 4.95 to 7.43 years. This is based on a depth of 10-15 feet for the sewer beneath the BCSP. Groundwater which is intercepted would then be discharged to the Clinton River. However, no surface water is used for drinking or ag/aquaculture within three miles. Score as 0.
- Groundwater beneath the BCSP is not currently being produced for use. Wells within one mile of the site do not produce water for domestic drinking purposes. Score as 0.
- No known population would be effected because groundwater is not being used at the site or downgradient of it. Public water is supplied to the base and the area within one mile of the base by the city treatment plant. Score as 0.
- Population greater than 100, see question 45. Score as 3.
- Distance to nearest base boundary is approximately 2,500 feet. Score as 3.
- The estimated travel time based on groundwater flow, interception by storm drainage system and then discharge to river would be between 4.95 and 7.43 year. See question #55. Score as 3.
- 63. See question #50. Clinton River would be affected. Score as 1.0.
- No known critical environments occur with one mile of the site. Score as 0.

Site identification: Base Coal Stroage Pile (Site 08) - BCSP

SU	RFACE WATER PATHWAYS				
	served releases	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
1.	Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10 If no, assign score of 0 and proceed to item 2.	. 0 100	1	0	100
Pat	thway characteristics				
2.	Distance to nearest surface water	0(1)2 3	4	4	12
3.	Net precipitation	0(1)2 3	1	1	3
4.	Surface erosion potential	0(1)2 3	4	4	12
5.	Rainfall intensity	0 123	4	8	12
6.	Surface permeability	0 123	3	6	9
7.	Sum of items 2 through 5			23	48
8.	Normalized score (multiply item 7 x 100/48)			<u>47.91</u> 7	
9.	Flooding potential	<b>0</b> 1 2 3	8	0	24
10.	Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100	o.	4	47.917	
11.	Waste containment effectiveness factor (Table 2)			1.0	
12.	Final score for surface water pathways (multiply in	tem 10 x item		47.917	

# COMMENTS ON SURFACE WATER PATEWAYS

All comments are presented on the typed sheets following the scoring sheets for the  ${\tt BCSP}.$ 

Prepared by Con Olemba 9D & 88 Checked by RHG 12/4/88

Site identification: BCSP

# GROUNDWATER PATEWAYS

	Served releases			cle	Mult	iplier	Product (score x mult.)	Max.
13	Have contaminants been detected in groundwater?  If yes, assign score of 100 and proceed to item 20.  If no, assign score of 0 and proceed to item 14.	0		100		1	100	100
Pat	hway characteristics							
14.	Depth to seasonal high groundwater from base of waste or contaminated zone	) 1	. 2	3	i	9		
15.	Permeability of the unsaturated	1	_			5		27 15
16	Tegilana							
	Infiltration potential 0 Sum of items 14 through 16	1	2	3	:	;		15
	Normalized score (multiply item 17 x 100/57)							57
	Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table							
		1	2	3	5			15
0.	Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.							
1.	Waste containment effectiveness factor (Table 5)					i	1.0	
	Final score for groundwater pathways (multiply itam 20	r i	ite	<b>m</b> 21)		-	100	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification:	BCSP		
CONTAMINANT HAZARD	SURFACE WATER		
	peen detected in surface was	n 1), complete items 23 throu	agh 28. If

contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate. Result Logarithm Score (circle (base 10) one) 23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet) 24. Human health hazard score 0 1 2 4 6 25. Normalized human health hazard score (multiply item 24 x 100/6) 26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet) 27. Ecological hazard score 0 1 2 3 4 5 6 28. Normalized ecological hazard score (multiply item 27 x 100/6) See list of ground-0 1 2 3 4 5 6 7 8 9 29. Maximum human health hazard index Contaminant: water contaminants 30. Normalized human health hazard score (multiply item 29 x 100/9) See list of ground-Contaminant: water contaminants 0 1 2(4)6 31. Maximum ecological hazard index 66.667 32. Normalized ecological hazard score (multiply item 31 x 100/6) CONTAMINANT HAZARD -- GROUNDWATER If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of

ontan	inants, as appropriate.	
33.	Sum of human health hazard quotients (from column 10 of Hazard Worksheet)	564 <u>45.17</u> 03 <u>4.751</u> 6
34.	Human health hazard score	0 1 2 46
35.	Normalized human health hazard score (multiply item 34 x 100/6)	100
36.	Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)	34 <u>.0480</u> 1 <u>.532</u> 1
37.	Ecological hazard score	0 1 2 3 (4)5 6
38.	Normalized ecological hazard score (multiply item 37 x 100/5)	66.667
39.	Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9 Contaminant:
40.	Normalized human health hazard score (multiply item 39 x 100/9)	
41.	Maximum ecological hazard index	0 1 2 4 6 Contaminant:
42.	Normalized ecological hazard score (multiply item 41 x 100/6)	

Site identification: BCSP

IUM/	AN HEALTH RECEPTORS SURFACE WATER PATHWAY				
	•	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
3.	Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	<b>0</b> 1 2 3	3	0	9
4.	Water use of nearest surface water body(ies)	0 123	3	6	9 .
5.	Population within 1000 ft (305 m) of the site	0 1 2 3	1	3	3
6.	Distance to the nearest installation boundary	0 1 2(3)	1	3	3
7.	Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2(3)	1	3	3
8.	Sum of items 43 through 47			_15	27
9.	Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)		<u>55.55</u> 6		
ΣΩL	OGICAL RECEPTORS SURFACE WATER PATHWAYS				
0.	Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	012 3	5	5 :	15
1.	Presence of "critical environments" within 1 mile (1.6 km) of the site	3	1	0_	3
2.	Sum of items 50 and 51			51	18
	Final score for ecological receptors on surface water pathways (multiply item $52 \times 100/18$ )			27.778	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: BCSP

N HEA	LIH RECEPTORS GROUNDWATER PATHWAY			
	•	Score (circle one)	Multiplier	Product (score x mult.)
54.	Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	①1 2 3	9	0
55.	Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	<b>0</b> 1 2 3	. 5	0
56.	Groundwater use of the uppermost aquifer	①1 2 3	4	0_
57,	Population potentially at risk from groundwater contamination	06 9 12 18 24 27 36	1	0
58.	Population within 1000 ft (305 m) of the site	0 1 2(3)	1	3
59.	Distance to the nearest installation boundary	0 1 2(3)	1	3
60.	Sum of items 54 through 59			6
61.	Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			6.25
OGICA	L RECEPTORS GROUNDWATER PATHWAYS			
62.	Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 23	3	_9_
63.	Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 2 3	3	3
64.	Presence of "critical environments" within 1 mile (1.5 km) of the site	3	1	0
65.	Sum of items 62 through 64			<u>12</u> 2
66	Final score for ecological receptors on groundwater pathways			57.143

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

#### SCORING SUMMARY SHEET

		Pa	thways sco	re	Contaminant hazard score		Receptors so	ore		Overall score
67.	Surface water/human health scores	(	47.917 item 12	x	22.222 item 25/30	x	55.556 item 49	)	/10,000 =	5.916
68.	Surface water/ecological scores	(	47.917 item 12	<b>x</b> .	66.667 item 28/32	x	27.778 item 53	)	/10,000 =	8.874
69.	Groundwater/human health scores	(	100 item 22	x	100 item 35/40	x	6.25	)	/10,000 =	6.25
70.	Groundwater/ecological scores	(	100 item 22	x	66.667	x	57.143	)	/10,000 =	38.10

# OVERALL SITE SCORE:

71. 
$$(\frac{5.916}{\text{item } 67})^2 \times 5 + (\frac{8.874}{\text{item } 68})^2 + (\frac{6.25}{\text{item } 69})^2 \times 5 + (\frac{38.10}{\text{item } 70})^2 = \frac{1900.666}{\text{item } 70}$$

72. Overall site score = 
$$1900.666$$
 / 3.464 = 12.586 = 13

TABLE P-14
BCSP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

BCSP GROUN	CONTAMINANT NAME NAME CCSP GROUNDWATER CONTAMINANT HAZARD	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (Ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
	ن د	0	0.04	360	100	280
	BENZENE	700	30	5300		32
	BIS(2-ETHYLHEXYL)PHTHALATE	15	10000	160		310
	BUTYLBENZYLPHTHALATE		10000	1700		099
	CADMIUM	13	50	99.0	2	20
	CHROMIUM		0.016	16	100	500
,	COPPER	09	2000	9.5	200	210
1,4-	DICHLOROBENZENE		097	1120		069
-h'-	DICHLOROBENZENE		097	2850		240
-1,1	DICHLOROETHANE		15	118000		14
TRANS-1,2-	DICHLOROETHENE		2.6	135000		7.2
	DICHLORUFILDOROME I HANE		911	00011		æ (
2 / 5	DIEINTLPHINALAIE		00001	2100		120
. + 1 7		•	0.7.	070		000
	FIHYI RENZENE	7	2200	00002		200
	I BON	85	150	7007	0003	100
•	LEAD	2	100	35	2000	001
	MANGANESE	2420	0.25	350	200	007
	METHYLENE CHLORIDE		7	193000		4.4
	NAPHTHALENE		280	2300		430
,		88	260	1100	200	100
- 7			0.7	8280		
			280	25	37300	780
			5,	28800		120
	PEI HIDRO (ASSUME MOIUK UIL.)		6.10	00004		
	PHENOL	·	0089	10000		7.7
	SILVER	J	2 م	1 2		0.0
1.1.2.2-	TETRACHLOROETHANE		27	0250		7 0
	TETRACHLOROETHENE		7	5280		77
			57	17500		83
	TRICHLOROETHENE		45	45000		17
	TRICHLOROFLUOROMETHANE		11	11000		7.7
	VINYL CHLORIDE		1000	381000		7.2
	XYLENES		16	13500		320
	ZINC	%	10000	180	2000	1000
	7 = (col 2) x 8 = (col 2) x 9 = (col 2) x 10 = (col 9) /	(0.0065 kg/day)				
	loo) /					

TABLE P-14 (continued)
BCSP HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

HEALTH AQUATIC TERRESTRIAL HAZARD HAZARD HAZARD HAZARD UOTIENT QUOTIENT	00000	0.0000 0.0000 0.0000	0.0038	000000	19.6970	0.0000	6.5217	0.000	0.0000 0.0000 0.0000		0000	000000	0.000	0.0021	1 02/7 0 1/50 0 0114	0.000	6.9143	0.000	0.000	0.0800			00000	0.0000	0.000	0.000 0.0000 0.0000	0000	00000	0.000	00000	0.0000	0.0000	0.0480	14	
9 10 TOTAL HEALTH INTAKE HAZARD (ug/day) QUOTIENT	0.0000	0.000	•		<b>(*)</b>		20		0.000						0.0000		11132,0000	0.000		23	0.000			0	7 (	0,000							0000	SUMS = 564	
7 B DRINKING FOOD WATER INTAKE INTAKE (UG/day)		0.0000	۳,			0	120 81.9	0.0	5.0	0	0.0	0 0.00	0.0	4.0	116 37, 2000	•	4840 6292,0000	0 0.00			0000.0			000000000000000000000000000000000000000	4 0.0104		000000			0 0.000		0.0000	0000.450	(0.0065 kg/day)	
CONTAMINANT NAME GCSP GROUNDWATER CONTAMINANT HAZARD	ARSENIC	BENZENE	BIS(2-ETHYLHEXYL)PHTHALATE	BUTYLBENZYLPHTHALATE	CADMIUM	CHROMIUM		1,4- DICHLOROBENZENE	1,3 DICHLOROBENZENE 1,1 DICHLOROETHANE	ANS-1,2- DICHLOROETHENE	DICHLOROFLUOROMETHANE		Z,4- DIMETHYLPHENOL	FINAL DENZENE	IRON	LEAD	MANGANESE	METHYLENE CHLORIDE	NAPHTHALENE	NICKEL		PET HYDRO (ASSUME JP-4)	DRO (ASSUME	PHENOL	PYKENE	1.1.2.2- TETRACHIOROFIHANE		TOLUENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE	ATLENES		$7 = (col 2) \times (2 L/day)$ $8 = (col 2) \times (col 6) \times$	Col 9 = (col 7) + (col 8) Col 10 = (col 9) / (col 3) Col 11 = (col 2) / (col 4)



# APPENDIX Q

# CORRESPONDENCE

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION THOMAS J. ANDERSON MARLENE J. FLUHARTY KERRY KAMMER O. STEWART MYERS DAVID D. OLSON RAYMOND POUPORE



JAMES J. BLANCHARD, Governor

### DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING BOX 30028 LANSING, MI 48909

GORDON E. GUYER, Director

December 8, 1988

Mr. Robert H. Gilbertsen Assistant Project Engineer WESTON 100 Corporate North, Suite 101 Route 22 and Lakeside Drive Bannockburn, Illinois 60015

Dear Mr. Gilbertsen:

Your request for endangered species information was checked against known localities for special natural features recorded in the Michigan Natural Features Inventory (MNFI) database, which is part of the newly established Natural Resource Heritage Program of the Department of Natural Resources, Wildlife Division. The MNFI is an ongoing, continuously updated information base which is the most comprehensive single source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features.

There are no known occurrences of Federal- or State-listed endangered or threatened species at the locations(s) specified: Selfridge Air National Guard Base.

This database, however, cannot provide a definitive statement on the presence, absence, or condition of special natural features in any given locality, since most sites have not been specifically or thoroughly surveyed for the occurrence of special features. Therefore, the information provided above should not be regarded as a complete statement on the occurrence of special natural features at the sites(s) in question.

Thank you for your advance coordination in addressing the protection of Michigan's Natural Resource Heritage.

DEC 1 2 1988

ROY F. WESTON, INC.

Sincerely,

Thomas F. Weise

Endangered Species Coordinator

Wildlife Division

517-373-1263



100 CORPORATE NORTH, SUITE 101 ROUTE 22 AND LAKESIDE DRIVE BANNOCKBURN, ILLINOIS 60015 (312) 295-6020

# FILE COPY

# 13 October 1988

Mr. Tom Weise MDNR Wildlife Division Box 30028 Lansing, Michigan 48909

W.O.# 0628-14-02

Subject: Critical Environments Around

Selfridge ANGB

Dear Mr. Weise:

As we discussed on the phone on 12 October 1988, WESTON is working for the Air Force on a Superfund-type environmental cleanup at the Selfridge Air National Guard Base on the shore of Lake St. Clair. The Base contains 8 individual sites that may require cleanup.

One of the items WESTON is investigating is whether the sites may presently threaten critical habitats. Another item of concern is whether future remediation activities would threaten critical habitats. Remediation activities typically involve earth moving, well drilling, and truck traffic. The Air Force defines critical habitats as follows:

- (1) lands or waters specifically recognized or managed by federal, state, or local government agencies or private organizations as rare, unique, unusually sensitive, or important natural resources (including designated critical habitat for endangered species, wilderness areas, nature preserves, or wildlife sanctuaries, but not parks established for historic preservation or recreation; and,
- (2) habitat utilized by any federally designated endangered species on a permanent or seasonal basis.

Our concern includes any critical habitat within 1 mile (1.6 kilometers) of the Base.

C0807



Mr. Tom Weise

-2-

13 October 1988

It is our understanding from our phone conversation that no critical habitats are affected. Please review the enclosed maps and mail your conclusion to us.

Very truly yours,

ROY F. WESTON, INC.

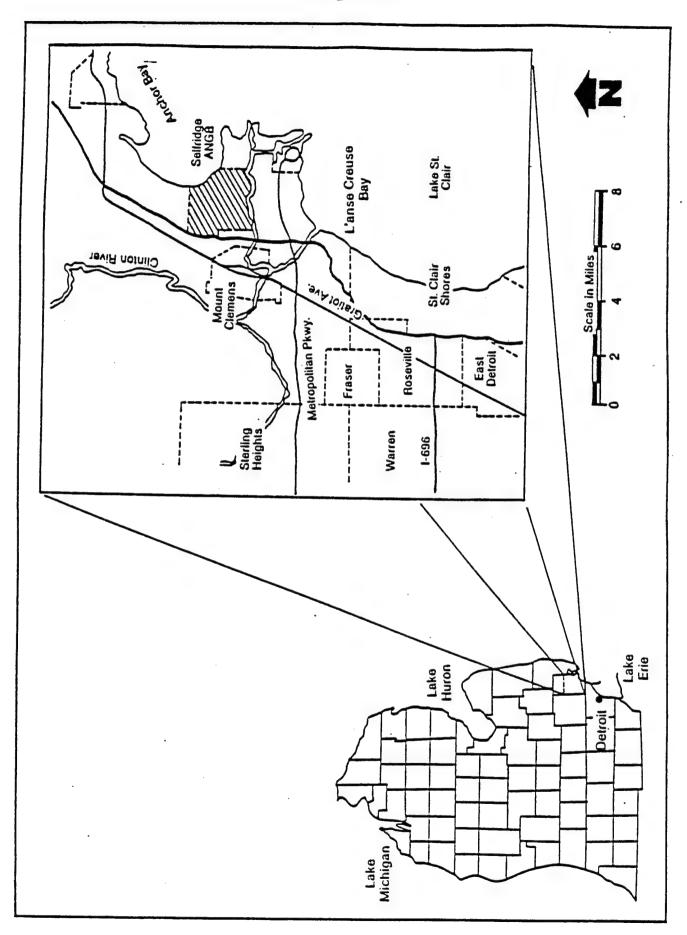
Robert H. Gilbertsen

Assistant Project Engineer

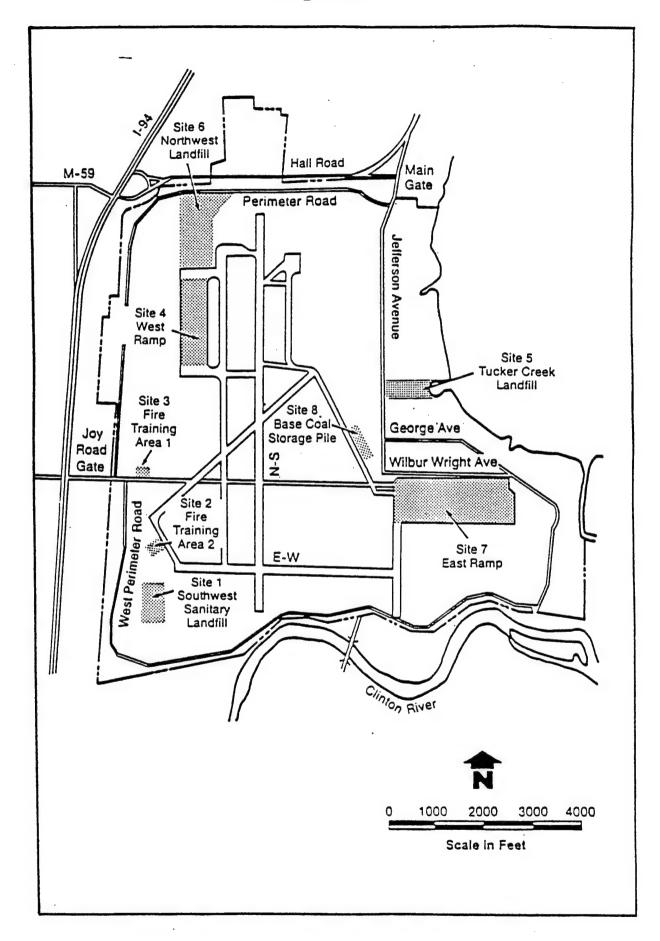
RHG/kvh

Attachments

C0807



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100 CORPORATE NORTH, SUITE 101 ROUTE 22 AND LAKESIDE DRIVE BANNOCKBURN, ILLINOIS 60015 (312) 295-6020

10 August 1988

Mr. Andy Hogarth Michigan DNR 530 West Allegan Lansing, Michigan 48933

W.O. 0628-14-02

SUBJECT: Second request for ARAR's for Selfridge Base

Dear Mr. Hogarth:

As we discussed over the telephone on 8 August 1988, Ken Burda has told WESTON that the Environmental Response Division would be our best contact with MDNR. With Mr. Burda's recommendation in mind, WESTON is resubmitting a set of questions from 21 July 1988 that were not previously answered. We look forward to receiving your answers and to the opportunity of working with you in the coming months.

Very truly yours,

ROY F. WESTON, INC.

RHG/ejf

Enclosure

Robert H. Gilbertsen Assistant Engineer



100 CORPORATE NORTH, SUITE 101 ROUTE 22 AND LAKESIDE DRIVE BANNOCKBURN, ILLINOIS 60015 (312) 295-6020

FILE COPY

21 July 1988

Mr. Ken Burda
Hazardous Waste Permit Chief
Michigan Department of Natural Resources
530 West Allegan
Lansing, MI 48933 W.O. 0628-14-02

Subject: Michigan ARAR's for Selfridge ANGB cleanup

Dear Mr. Burda:

Thank you for your prompt response to WESTON's preliminary request for Michigan ARAR's pertaining to the cleanup project at Selfridge Air National Guard Base. The information you provided will assist greatly in development of remedial alternatives.

Now that WESTON has some general regulatory information, we would like to learn more about four specific points.

# 1. CLEANUP CRITERIA FOR SOIL AND GROUNDWATER

Does MDNR issue chemical-specific cleanup criteria for chemical contaminants in soil and groundwater? If so, are these criteria developed for individual sites, or are there state-wide standards you can send us? Chemical-specific criteria will strongly affect the extent of cleanup and the selection of remedies.

# 2. WATER RESOURCES COMMISSION

Please clarify the role of the Michigan Water Resources Commission with respect to the cleanup. Should WESTON consult with the Commission as well as MDNR, or can MDNR remain our sole point of contact with the State of Michigan?

# SITE ASSESSMENT SYSTEM (SAS)

WESTON intends to use the DOD's Defense Priority Model (DPM) rather than Michigan's SAS to score and rank the hazards present at the base. Like SAS, the DPM is an extension of USEPA's Hazard Ranking System (HRS).

Mr. Ken Burda

-2-

21 July 1988

#### 4. ADDITIONAL DOCUMENTS

Can MDNR provide the following additional documents?

- Underground Storage Tank Act (Act 423, P.A. 1984) Α.
- Applicable rules promulgated by the Water Re- . B. sources Commission (as opposed to legislation granting rule-making authority to the Commission) in the areas of waste water, groundwater, and water quality standards.
- Michigan Environmental Response Act (Act 307, P.A. 1982)

Feel free to contact WESTON if you have any questions about this request or any other matters regarding the cleanup program at Selfridge.

Very truly yours,

ROY F. WESTON, INC

Gilbertsen, E.I.T.

Assistant Project Engineer

Edward A. Need, P.G.

Project Manager

RHG/EAN/ef

COMMUNICATION RECORD

	A DA B'S
Name: KEN BURDA	Subject: MI ARAR'S
Company: MDN R	Delegated/Route to: ED NEED
Address: HAZARDOUS WAS	STE PERMIT CHIEF
	Due/Response Date:
Phone: 517-373-0530	From: BOB G
Sequence Follow-up & Dates Needed Subject/I Said	Response/They Said
7/14 MICHIGAN ARAG	2's .
-> REQUEST	
JULY I RECE	vap? YES!
7054 / 2000	(5)
-> ABLE TO	
	YES!
HOLP?	465.
·	
-> MHEN	_
RESPOND	NEXT WEEK-
	THEY RE PULLING
	response
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X 0N 7/22	RHG WILL CALL
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BORDY NO	ARRIVED -
HAVEN	1 may 1 acros
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	書 <b>名</b> ITIME
2201-2202 REV. 7-87	Pryroad in USA 91987



100 CORPORATE NORTH, SUITE 101 ROUTE 22 AND LAKESIDE DRIVE BANNOCKBURN, ILLINOIS 60015 (312) 295-6020

6 July 1988

Mr. Basil Constantelos
USEPA Waste Management Division, Mail Code 5H-12
230 South Dearborn Street
Chicago, IL 60604 W.O. 0628-14-02

Subject: Request for Federal ARARs

Dear Mr. Constantelos:

WESTON is conducting a preliminary feasibility study for remediation of eight waste sites at Selfridge Air National Guard Base near Mr. Clemens, Michigan. Although none of the sites is on the Superfund list, the feasibility study will follow the standard Superfund format.

An important element of the feasibility study is the section on Applicable or Relevant and Appropriate Regulations (ARARS). WESTON requests that USEPA identify and provide copies of Federal waste site cleanup ARARS that apply to landfills, fuel spills, or heavy metal contamination. We require action-specific, chemical-specific, and location-specific ARARS. For each ARAR covered in your response, please provide the regulation's title, the citation, a brief summary of areas of applicability, and a copy of the complete text.

WESTON is pleased to take part in this waste cleanup in the State of Michigan. We request your prompt reply with the ARARS, and we stand ready to answer any questions you might have about the project.

Very truly yours,

ROY F. WESTON, INC.

Robert H. Gilbertsen

Assistant Project Engineer

RHG/iec



100 CORPORATE NORTH, SUITE 101 ROUTE 22 AND LAKESIDE DRIVE BANNOCKBURN, ILLINOIS 60015 (312) 295-6020

1 July 1988

Mr. Ken Burda
Hazardous Waste Permit Chief
Michigan Department of Natural Resources
530 West Allegan
Lansing, MI 48933 W.O. 0628-14-02

Subject: Request for Michigan ARARs

Dear Mr. Burda:

WESTON is conducting a preliminary feasibility study for remediation of eight waste sites at Selfridge Air National Guard Base near Mt. Clemens, Michigan. Although none of the sites is on the Superfund list, the feasibility study will follow the standard Superfund format.

An important element of the feasibility study is the section on Applicable or Relevant and Appropriate Regulations (ARARS). WESTON requests that Michigan DNR identify and provide copies of Michigan's waste site cleanup ARARS that apply to landfills, fuel spills, or heavy metal contamination. We require action-specific, chemical-specific, and location-specific ARARS. To assist you, we are providing a list of 12 Michigan Action-Specific ARARS we have already identified but not researched. For each ARAR covered in your response, please provide the regulation's title, the citation, a brief summary of areas of applicability, and a copy of the complete text.

WESTON is pleased to take part in this waste cleanup in the State of Michigan. We request your prompt reply with the ARARS, and we stand ready to answer any questions you might have about the project.

Very truly yours,

ROY F. WESTON, INC.

Robert H. Gilbertsen

Assistant Project Engineer

RHG:amp Enclosure MESTER

# Action-Specific ARARs Checklist, Selfridge ANGB, Michigan Requirements

	Doe Apply	Does This Requirement ply to Site Condition	Does This Requirement Apply to Site Conditions?	
l		Yes	No	Explanations
_	. Hazardous Haste Hanagement Act (Act No. 64, P.A. 1979)	· ×		Consistent with RCRA, Applicable to all potential alternatives.
2.			×	Requires registration and permitting of underground storage tanks.
ei.		: ×		Applicable to soil removal activities and potential air stripping.
4.	Hichigan Solid Wasle Management Act (Act No. 641, P.A. 1978)	×	,	Applicable to site landfills.
s,	HOUR - Water Resources Commission (Act 245, P.A., 1929, as amended) R 323, Parts 9,21. Wastewater Reporting and Surveillance fees Rules, and Wastewater Discharge Permits (NHA NPDES)	×		This regulation addressed the removal of liquid industrial waste and outlines requirements for licenses, recordkeeping and transportation
9		×		Applicable to soil removal activity.
	Liquid Industrial Waste Disposal Act (Act No. 136, P.A. 1984)		* .	This regulation addresses the removal of liquid industrial waste and outlines requirements for licenses, recordkeeping and transportation
89		×	•	Applicable to alternatives that involve discharges to groundwater.
6 9	29, as	× .		Applicable to alternatives that involve discharges to surface water.
	2	×		Requires risk ässessments for hazardous waste sites.
<u>-</u>	ll. Great Lakes Water Quality Agreement (22 Nov. 1978)	•		Regulates water quality between Canada and the United States.